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SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 5 IN SET 119

Dumont Models RA-112A and RA-113 were covered in Photofact Folder 5 in set 119. Later production changes on these models are given below.

RA-112A, #1222446 RA-113, #1324258

TO IMPROVE HORIZONTAL SYNC. STABILITY

R79, the 2700Ω plate load resistor for the 2nd. sync. clipper, was disconnected from the +40V line and connected to the +70V line.

RA-112A, #1233233 RA-113, #1336617

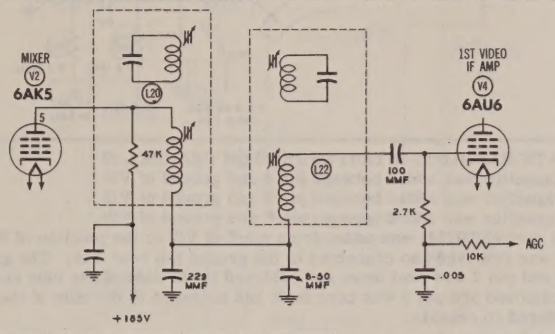
RELOCATION OF HV FUSE

The 1/4 amp. fuse, M5, was changed to a cartridge type and relocated inside power supply.

RA-112A, #1227834 RA-113, #1331143

TO IMPROVE BAND PASS CHARACTERISTICS BETWEEN THE MIXER AND THE FIRST IF

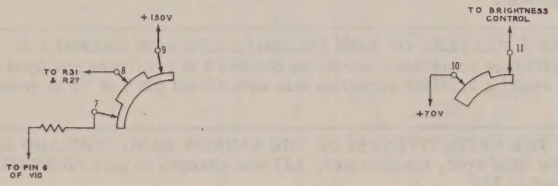
The RF tuning assembly was changed to part #89003912. L22 was changed to part #20005351. The partial schematic below shows the new circuit between the mixer and the 1st. video IF amp. V4.



Chassis coded "A-A" RA-112A, #1239006 RA-113 #1343368

TO OBTAIN MAXIMUM SENSITIVITY WHEN RECEIVING FM STATIONS

When strong and weak FM signals are present at the receiver it is possible for the strong signal to reduce the gain of the receiver when it is tuned to a weak signal. This results when a strong and weak signal fall within the passband of the receiver. When tuned to a weak signal the strong signal may cause the third video IF to draw grid current which adds additional bias to the AGC line thus decreasing sensitivity. To prevent this condition the third video IF is disconnected from the AGC line in FM position. To accomplish this a new selector switch part #05004661 was used. A partial schematic below shows the connections to the switch.



RA-112A, #1233334 RA-113, #1336618

TO RECENTER THE RANGE OF THE BRIGHTNESS CONTROL

R48 was changed to 220K.

RA-112A, #1240433 RA-113 #1343817

TO PROVIDE HOLD ADJUSTMENTS FROM THE TOP OF THE CHASSIS

The horizontal oscillator coil, L38, was changed to part #20005571. The slugs and coils are reversed in this unit to provide hold adjustments from the top of the chassis.

RA-112A, #1219683 RA-113 #1321389

TO ELIMINATE FEEDBACK AND REDUCE VERTICAL NOISE PICKUP

The shielded leads from pins 7 & 8 of V12, to the volume control were dressed as far as possible away from the vertical output transformer. The blue lead from pins 2 and 5 of V19 to T5 were dressed as far as possible from the IF circuits. The blue speaker lead to V14 was dressed away from the shielded wires mentioned in the first step.

Chassis coded "R".

TO ELIMINATE ABEAT ON CHANNEL 5

A fixed trap, part #2100541l, was connected in series with the picture tube cathode lead. A 78.75MC trap, part #21007131 was added in series with C48 at video detector, and the junction of L28 and pin 7 of V8.

"R" stamped on chassis, RA-112A #1232254

VIDEO AMPLIFIER TUBE CHANGE

To accommodate tube availability the video amplifier tube, V9 was changed to a type 6AC7. The tube socket wiring was changed when the 6AC7 tube was used.

RA-112A, #1225292 RA-113, #1328287

TO REDUCE OVERALL SOUND REGENERATION

A 5000MMF Capacitor was added from the junction of R38 and C34 to ground.

DUMONT MODELS RA-112A, RA-113

CONTINUED ON REVERSE SIDE

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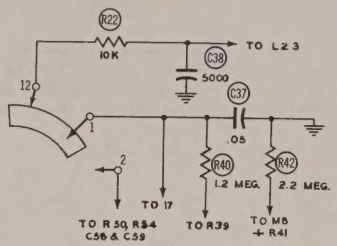
Chassis Coded "U"	MIXER TUBE CHANGE The mixer tube, V2, was changed to a type 6BC5.
RA-112A, #1237485 RA-113, #1342059	TO REDUCE "HOOK" AND "WHIP" DUE TO VIDEO IN THE SYNC. CIRCUITS R71 was changed to 470Ω
Chassis coded "A-A" RA-112A #1239006 RA-113 #1343368	TO ELIMINATE F-M PICKUP ON PHONO POSITION A position was added to switch M7 to remove B± from the screen of the first sound IF, V10, when operating on phono. The partial schematic below shows the wiring for the new switch (Part #05004511). The wiring to the remaining switch positions was not changed. 
RA-112A, #1253897 RA-113 #1351039	TO ELIMINATE HARMONIC INTERFERENCE ON CHANNEL 10 A 47MMF Capacitor was added between pin 4 and ground of V10 A 47MMF Capacitor was added between pin 3 and ground of V12 A 47MMF Capacitor was added between pin 6 and ground of V12. A choke coil part #21007241 was added from pin 6 of V12 to the junction of R38 and C34. The black wire to pin 7 of V12 was removed and connected to the ground tab near V14. The ground wire was removed from pin 7 of V12 and pin 7 was bent down and soldered to the side of the tube socket. The ground wire to pin 5 of V12 was removed and pin 5 was bent down and soldered to the side of the tube socket. The tube socket for V12 was soldered to chassis.
RA-112A, #1243110 RA-113 #1243110 Chassis coded "A-B"	TO PREVENT TRIGGERING OF THE VERTICAL OSCILLATOR BY 15KC SWEEP SIGNAL The socket wiring to the two halves of V18 was reversed. The lead connecting R83 to R5 was shielded and the shield was connected to the -60V line. C86 was removed and connected in series with the yellow lead of T3. R83 was disconnected from V18 and connected to the yellow lead of T3. The green lead of T3 was connected to pin 4 of V18. A .1MFD capacitor was added from the green lead of T3 to ground. R84 was disconnected from the junction, R85 and R88 and reconnected directly to pin 5 of V18. The line connecting V18 and the junction of R85 and C88 was shielded. The red, green and yellow leads of T3 were shielded and connected to ground.
RA-112A #1246882 RA-113 #1348066	TO ELIMINATE A PATTERN OF FINE DIAGONAL LINES ON CHANNEL 8 This interference sometimes occurs on channel 8 in receivers equipped with a channel 5 trap. To eliminate this effect a 2.5MMF capacitor was added from pin 7 of V8 to ground.
RA-112A #1252325 RA-113 #1351175	TO IMPROVE THE EFFECTIVENESS OF THE NARROW BAND SYNC AND AGC STAGES The narrow band sync. transformer, L37 was changed to part #20006231. C80 was changed to 20MMF. R74 was changed to 27K
RA-112A #1257901 RA-113 #1352980	RESISTOR WATTAGE RATING INCREASE R97 was replaced with a 2 watt 100K unit to eliminate possibility of break down due to overheating.
RA-112A #1257059 RA-113 #1352001 Coded "A-G"	TO ELIMINATE PULL OR HORIZONTAL DISPLACEMENT OF THE PICTURE The junction of R74 and C81 was removed from pin 5 of V16. A 1Meg Resistor was added between pin 5 of V16 and the junction of R74 and C81. C80 remains connected to pin 5. The 1Meg resistor was shunted with a .1MFD capacitor. C76 was replaced with a .005MFD capacitor. The two jacks were re-wired, one to each end of the .1MFD capacitor and 1 Meg Resistor.
RA-112A #1257907 RA-113 #1353316	TO REDUCE CROSS-TALK IN THE FM POSITION The connection between terminal 1 of M7 and the junction of R17 and C37 was deleted. The connection tween terminal 2 of M7 and the junction of R50 and C58 was deleted. The connection between terminal 12 of M7 and R22 was deleted. R22 was then connected to the junction of C37, R40 and R17. TO INCREASE EFFECTIVENESS OF CHANNEL 5 BEAT INTERFERENCE TRAPS The fixed trap in the cathode lead of the picture tube was deleted and a tuneable trap part #21007132 was was added from the plate of the video amplifier to ground. A 100MMF capacitor was added from the filament of V8 to ground.
RA-112A #1260552 RA-113 #1358054	TO REDUCE SNOW ON WEAK SIGNALS R38 was replaced with an 8.2 Meg Resistor.
RA-112A #1260552 Coded "AL"	TUNER CHANGE WITH TUBE SUBSTITUTION With the substitution of a 6CB6 for the 6AK5 in the inputuner mixer stage, the mixer circuit was changed to maintain the high band selectivity of the tuner. The new inputuner is part #89003915.
RA-112A #1263751 Coded "AM" RA-113 #1361515	TO MINIMIZE CHRISTMAS TREE EFFECT WHEN SET IS FIRST TURNED ON This condition is due to multiple triggering of the horizontal sweep oscillator. It disappears when the horizontal hold control is reset. C93 was replaced with a 220MMF capacitor and L38 was readjusted.

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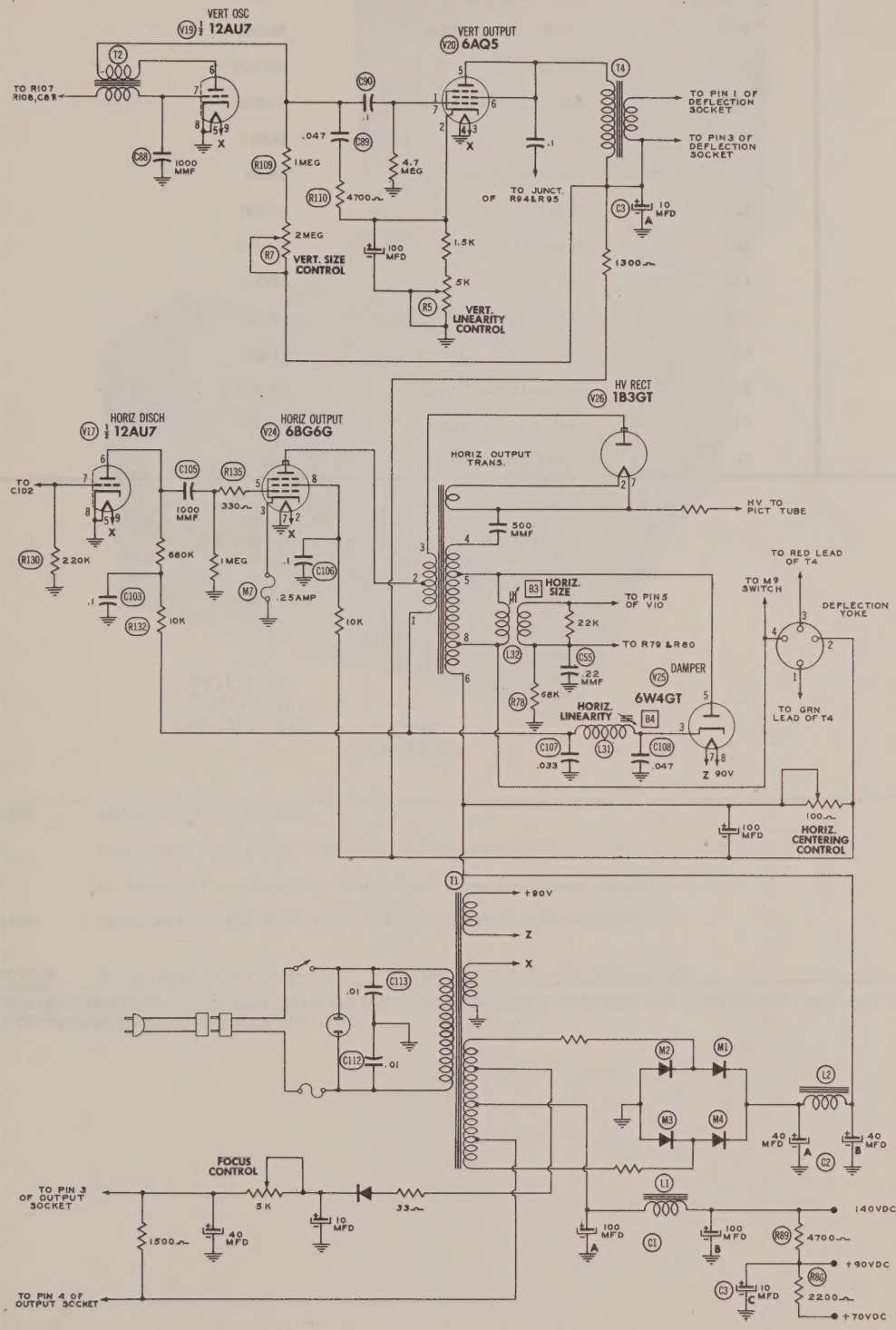
SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 11 IN SET 117

Some early production runs of Radio Craftsmen Television Receiver Model RC100A differed from the later production versions covered in Photofact Folder 11 in Set 117.

The partial schematic below shows the circuitry as used in the early RC100A Models



RADIO CRAFTSMEN
RC100A

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The part numbers of major components used in the early production runs are given below.

ITEM #	DESCRIPTION	PART NUMBER
V1A	RF Amp. Tube	6AG5
V1B	RF Amp. Tube	6BC5
V19	Vert. AFC.-Osc. Tube	12AU7
V20	Vert. Output Tube	6AQ5
V24	Horiz. Output Tube	6BG6G
V25	Damper	6W4GT
L32	Horiz. Size Coil	5A804
L31	Horiz. Lin. Coil	5A803
T5	Deflection Yoke	5X801
L2	Filter Choke	19S407
SR5	Selenium Rectifier	31X002
L24	1st. Sound IF	5X006
L25	2nd. Sound IF	5X006
L30	Horiz. Sync. Disc. Trans.	5X805
T3	Horiz. Output Trans.	19X006
T4	Vert. Output Trans.	19S007
T1	Power Transformer	19S207

AIRLINE
MODEL 25GAA-994B

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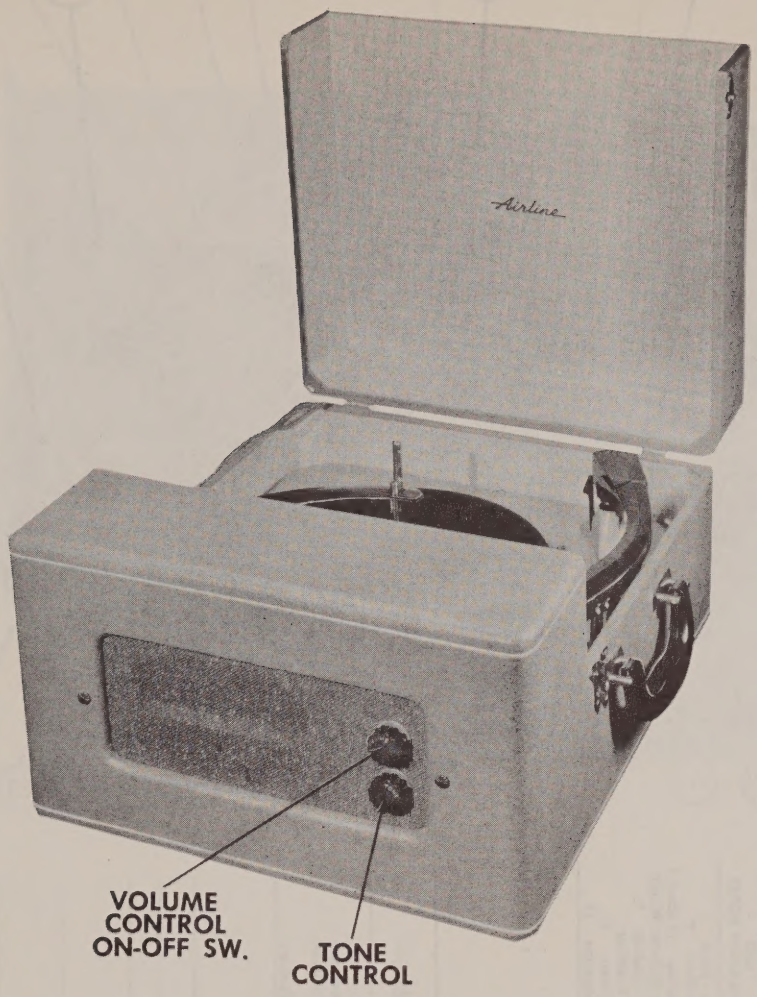
AIRLINE
MODEL 25GAA-994B



AIRLINE
MODEL 25GAA-994B

TRADE NAME	Airline Model 25GAA-994B
SUPPLIER	Montgomery Ward & Co., 619 Chicago Ave., Chicago, Ill.
TYPE SET	AC Operated Phono Amplifier With 3 Speed Automatic Record Changer
TUBES (Three)	Types 12AV6 or 12AT6 AF Amp., 50C5 Audio Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycle RATING .175 Amp. @ 117 Volts AC

FOR SERVICE INFORMATION ON RECORD CHANGER UNIT - SEF SIMILAR V-M MODEL 950 - PHOTOFACT SET #107 - FOLDER 13 OR RECORDER CHANGER MANUAL CM-3.

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PARTS LIST AND DESCRIPTIONS

AIRLINE MODEL 25GAA-994B

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: AIRLINE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1A	AF Amp.	12AV6	12AV6	7BT	
V1B	AF Amp.	12AT6	12AT6	7BT	
V2	Audio Output	50C5	50C5	7CV	
V3	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: AIRLINE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	150				EZ42215C		TVL-4420	Filter (Red) †
B	40	150							Filter (Red) †
C	20	150							Decoupling (Yellow) †
D	20	25							Output Cathode (Blue)†
C2	10000		¶	SII0000	D6-103	TM5S1	GP2-333-103	5HK-S1	Audio Coupling *
C3	10000		814 ♦	SII0000	D6-103	TM5S1	GP2-333-103	5HK-S1	Audio Coupling
C4	10000			SII0000	D6-103	TM5S1	GP2-333-103	5HK-S1	Tone Comp. ǂ
C5	.1	200		P288-1	DF-104	PJ2P1		2TM-P1	Line Isolation ††

* Not used in all models
† Some models use 20MFD for C1B. (C1 Part No. is then 1010A).
ǂ Some models use .005MFD in this application (Part #802)
†† Some models use .05MFD in this application (Part #803)
♦ Items C3, R7 are combined in one unit
¶ Items C2, R4 are combined in one unit

CONTROLS

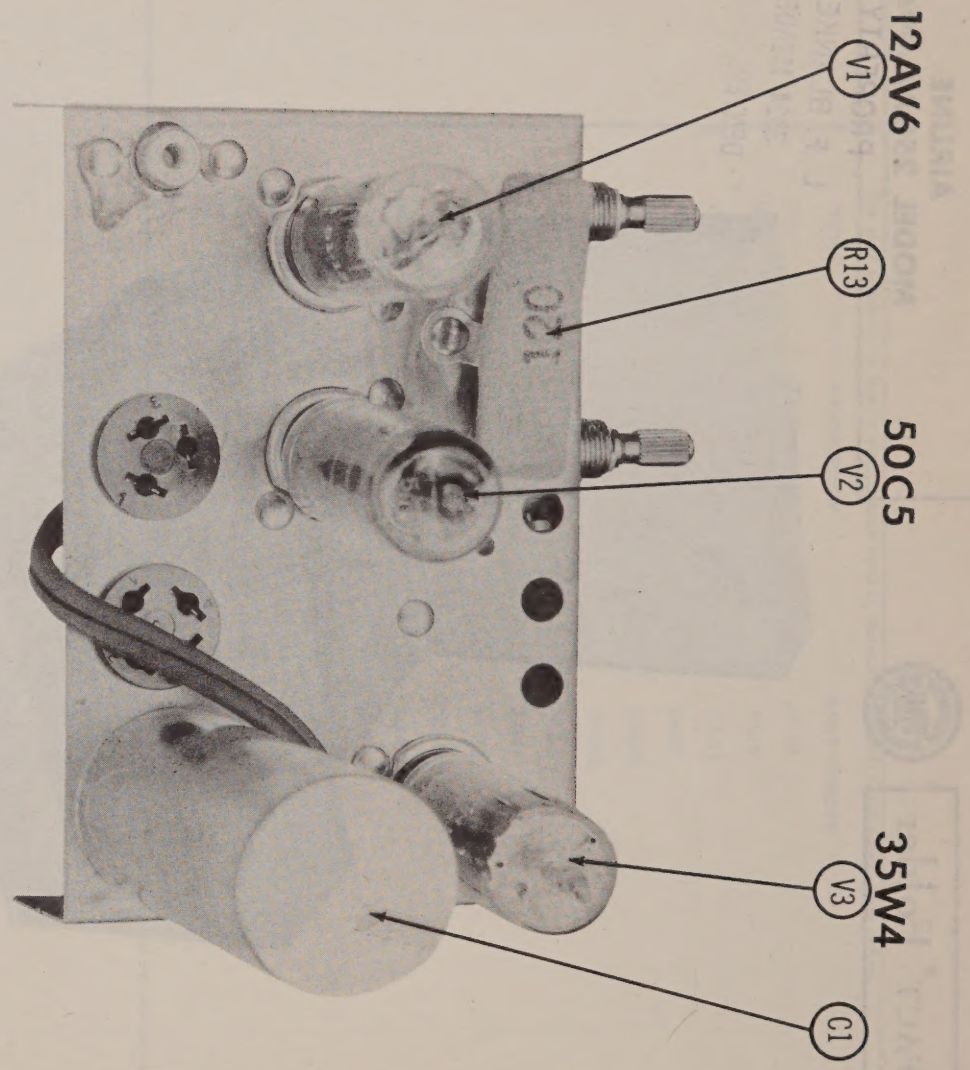
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRLINE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	500KΩ	½	H-9039	Q13-133	AG-60-Z	BSK-60-S	Volume Control
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Attach to R1A per instructions
C	Switch		Not Req.	76-1	SWB	Not Req.	Attach to R1A per instructions
R2A	500KΩ	½	R-3027	Q13-133	AG-60-Z	BS-60	Tone Control
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Attach to R2A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: AIRLINE PART No.	IRC PART No.	IDENTIFICATION CODES
R3	470KΩ	½		BTS-470K	Series Phono - See Note 1
R4	5Meg	½	♦		AF Amp. Grid - See Note 2
R5	220Ω	½	514	BTS-220	AF Amp. Cathode
R6	22KΩ	½	502	BTS-22K	Tone Compensation
R7	100KΩ	½	¶814	BTS-100K	AF Amp. Plate
R8	1Meg	½	516	BTS-1Meg	Feedback Network
R9	470KΩ	½		BTS-470K	Output Grid - See Note 3
R10	150Ω	½		BTS-150	Output Cathode
R11	50Ω	½			Surge Limiter - See Note 4
R12	1000Ω	½			Surge Limiter - See Note 2
R13	270Ω	1		BTA-270	Filter - See Note 5
R14	1000Ω	½		BTS-1000	Filter - See Note 6
R15	120Ω	7.5	601	1.3/4A-125	Filament Dropping - Wire wound

Note 1. Some models use a 22KΩ resistor in this application
Note 2. Not used in all models
Note 3. Some models use a 510KΩ resistor in this application
Note 4. Some models use a 30Ω resistor in this application
Note 5. Some models use a 200Ω resistor in this application
Note 6. Some models use a 2200Ω resistor in this application
♦ Items R4, C2 are combined in one unit.
¶ Items R7, C3 are combined in one unit.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		AIRLINE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	1.5KΩ	3.5Ω	130Ω	.4Ω	Part of speaker	A-3332	A-3025		

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	AIRLINE PART No.	JENSEN PART No.	QUAM PART No.	
SP1A	P M	3.5Ω	2610		46A07	
	CONE DIA.	V. C. DIA.				
SP1B	4" x 6"	9/16"				

PHONO CARTRIDGE and NEEDLE

ITEM No.	REPLACEMENT DATA							REMARKS
	AIRLINE PART No.	ASTATIC PART No.		SHURE PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M1	60H21	AC-AG-J	A-AG	W26B	A66U	33	0-2 or S-2	

ASTATIC, SHURE, AND ELECTRO-VOICE NEEDLE LISTING SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGE LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW.

PHONO NEEDLE

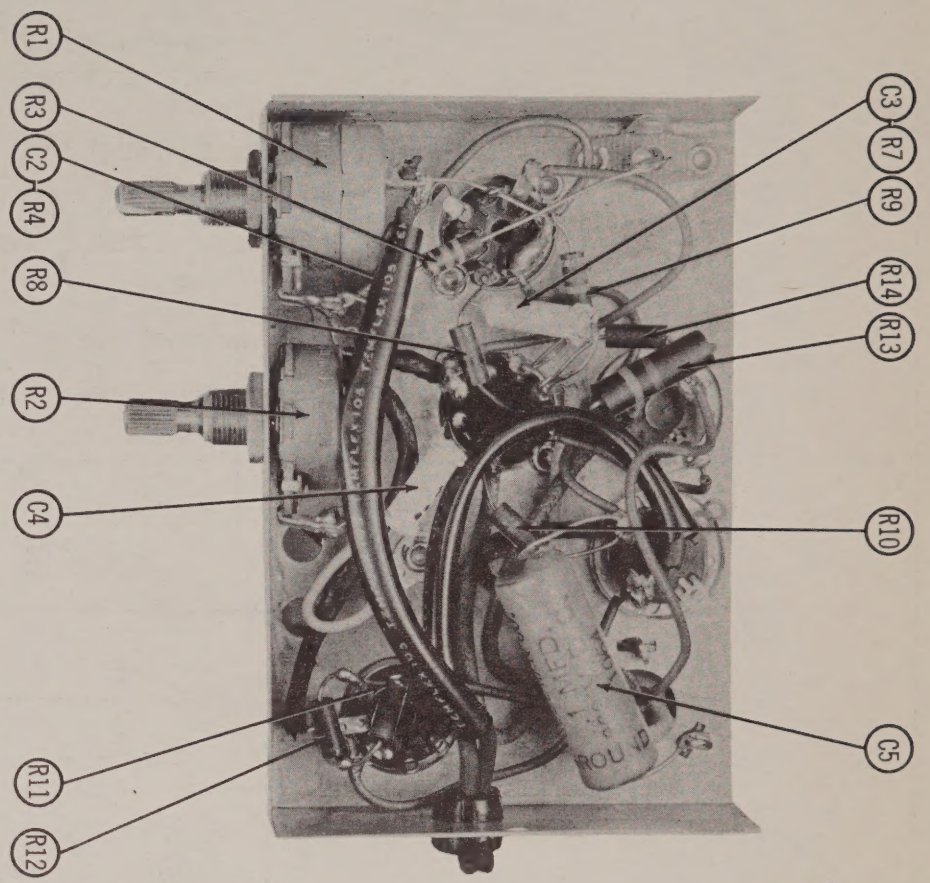
(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	AIRLINE PART No.	WALCO PART No.	JENSEN PART No.	
M2	61H12	W-20AGA or W-21AGS	E-962 or E-902	

MISCELLANEOUS

ITEM No.	PART NAME	AIRLINE PART No.	NOTES
	Socket	107A	4 Prong - Motor
	Socket	106B	3 Prong - Speaker
	Socket	104A	Single Prong - Pickup
	Plug	307C	4 Prong - Motor
	Plug	307B	3 Prong - Speaker
	Plug	305	Single Prong - Pickup
	Knobs	2414	

CHASSIS—BOTTOM VIEW



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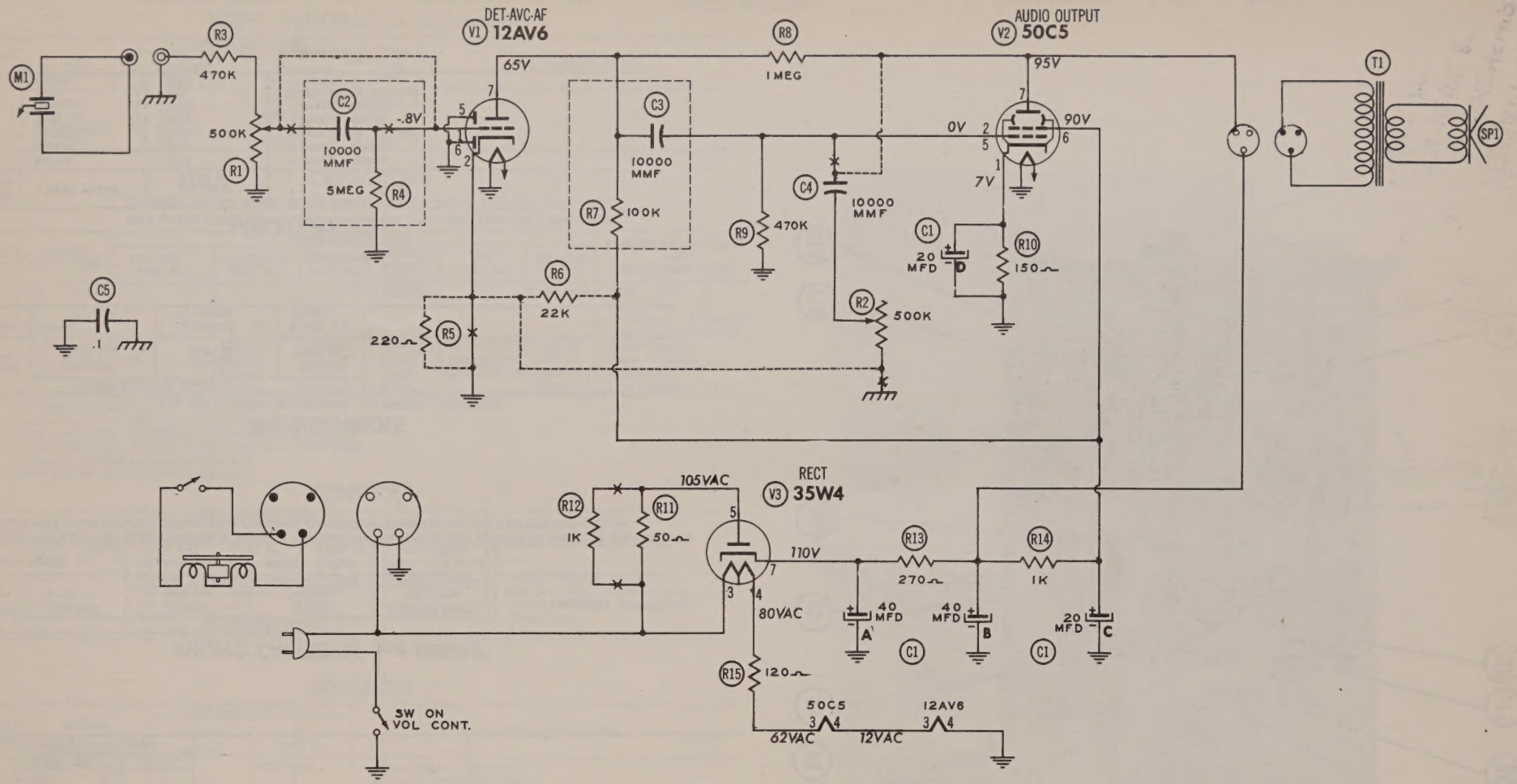

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12AV6	5Meg	0Ω	12Ω	0Ω	0Ω	0Ω	†100KΩ
V 2	50C5	150Ω	470KΩ	62Ω	12Ω	470KΩ	†1.3KΩ	†400Ω
V 3	35W4	INF	INF	227Ω	187Ω	277Ω	199Ω	30KΩ

† MEASURED FROM PIN 7 OF V3

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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1 - DC Voltage measurements are at 20,000 ohms per volt, AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Line voltage maintained at 117 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ± 15% in voltage and resistance readings.
6 - Proper output load connected.

PHOTOFACT* Folder

ARTONE MODELS MST-12, MST14, 14TR, 16TR, 17CD (1st. Prod.), 17CRR (1st. Prod.), 17ROG (1st. Prod.), 20CD (1st. Prod.), 20TR, 112X, 203D (1st. Prod.), 312, 819, 3163CR, 8163CR, 8193CM

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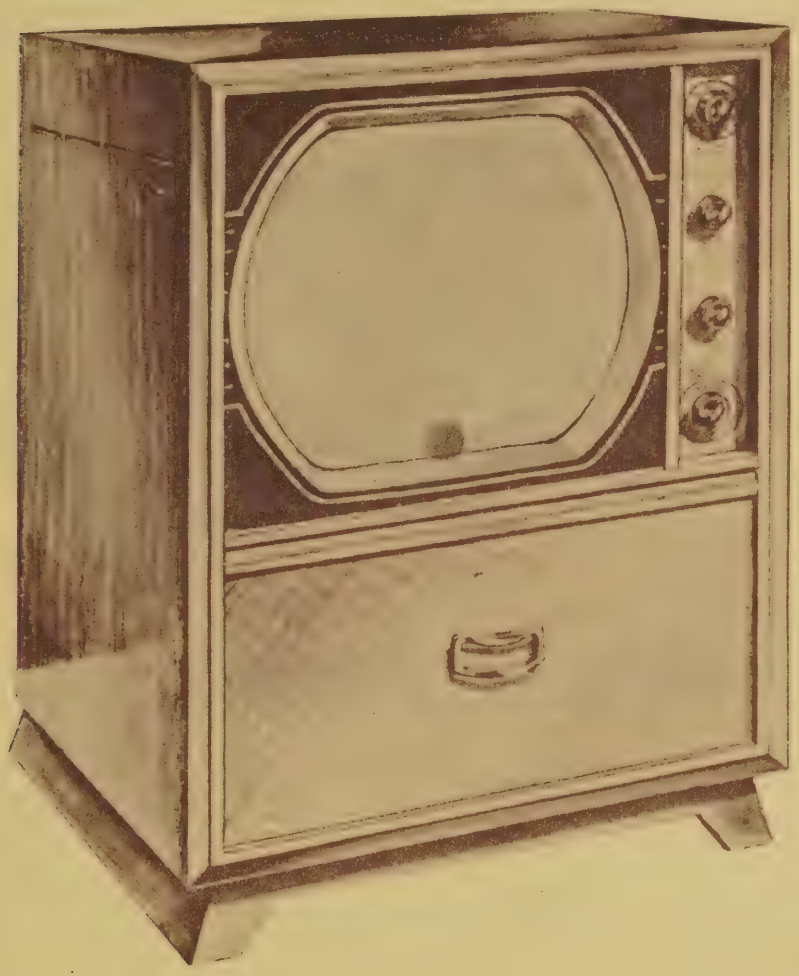
The contents for this envelope will be found among the last folders in this complete set of folders . . . *unless* it has been purchased as part of a *complete* volume of PHOTOFACTS assembled in a DeLuxe Binder.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.



MODEL 8193CM

ARTONE MODELS MST-12, MST14, 14TR, 16TR, 17CD (1st. Prod.), 17CRR (1st. Prod.), 17ROG (1st. Prod.), 20CD (1st. Prod.), 20TR, 112X, 203D (1st. Prod.), 312, 819, 3163CR, 8163CR, 8193CM

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DATE 6-52 SET 170 FOLDER 4

PHOTOFACT* Folder

*TRADE MARK

ARTONE MODELS MST12, MST14, 14TR, 16TR, 17CD (1st. Prod.), 17CRR (1st. Prod.), 17ROG (1st. Prod.), 20CD (1st. Prod.), 20TR, 112X, 203D (1st. Prod.), 312, 819, 3163CR, 8163CR, 8193CM

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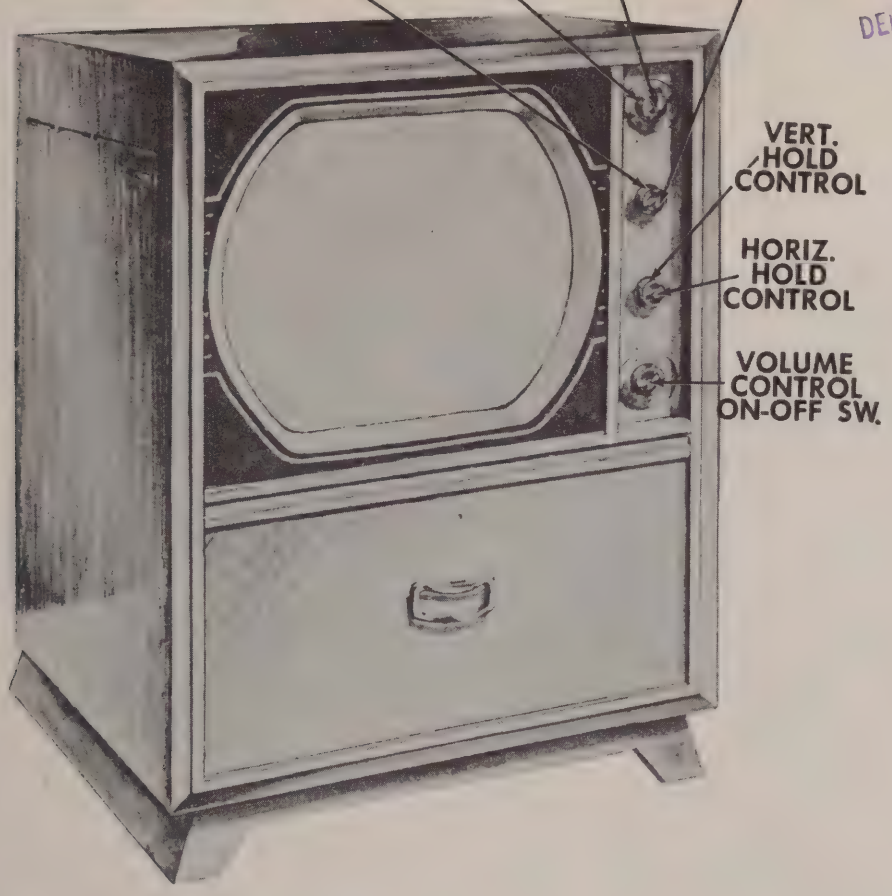
DENVER, COLORADO



Artone 8193CM

TRADE NAME	Artone Models MST12, MST14, 14TR, 16TR, 17CD (1st. Prod.), 17CRR (1st. Prod.) 17ROG (1st. Prod.) 20CD (1st. Prod.), 20TR, 112X, 203D (1st. Prod.), 312, 819, 3163CR, 8163CR, 8193CM.
SUPPLIER	Affiliated Retailers, 855 Ave. of America, New York, N. Y.
TYPE SET	Television Receiver
TUBES	Twenty One
POWER SUPPLY	110-120 Volts AC-60 Cycle RATING 1.85 Amp. @ 117 Volts AC
TUNING RANGE -	CHANNELS 2 thru 13

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ARTONE MODELS MST12, MST14, 14TR, 16TR, 17CD (1st. Prod.), 17CRR (1st. Prod.), 17ROG (1st. Prod.), 20CD (1st. Prod.), 20TR, 112X, 203D (1st. Prod.), 312, 819, 3163CR, 8163CR, 8193CM

HOWARD W. SAMS & CO., INC. • Indianapolis 1, Indiana

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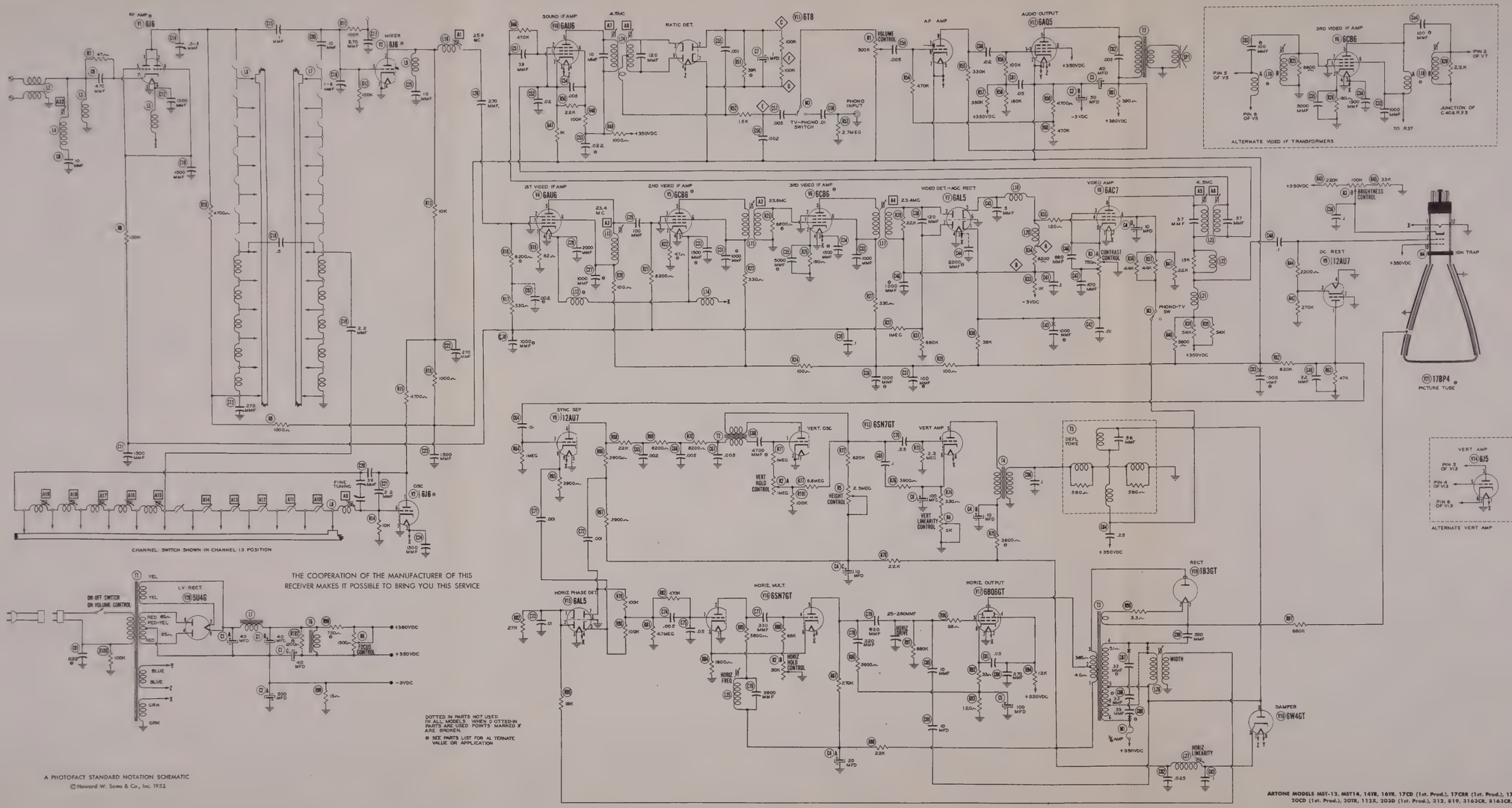
RF AMP V1 6J6
MIXER V2 6J6
OSC V3 6J6
SOUND IF AMP V10 6AU6
RATIO DET.
V11 6T8
A.F. AMP
AUDIO OUTPUT V12 6AQ5
1ST VIDEO IF AMP V14 6AU6
2ND VIDEO IF AMP V15 6CB6
3RD VIDEO IF AMP V16 6CB6
VIDEO DET.-AGC RECT. V17 6AL5
VIDEO AMP V18 6AC7
DC REST V19 12AU7
17BP4 PICTURE TUBE
SYNC SEP V13 12AU7
VERT. OSC.
V13 6SN7GT
VERT AMP
HORIZ PHASE DET V14 6AL5
HORIZ. MULT. V15 6SN7GT
HORIZ. OUTPUT V17 6BQ6GT
RECT V19 1B3GT
DAMPER V18 6W4GT
LV RECT V20 5U4G
3RD VIDEO IF AMP V5 6CB6
ALTERNATE VIDEO IF TRANSFORMERS
ALTERNATE VERT AMP V13 6J5
CHANNEL SWITCH SHOWN IN CHANNEL 13 POSITION
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
DOTTED IN PARTS NOT USED IN ALL MODELS. WHEN DOTTED-IN PARTS ARE USED POINTS MARKED X ARE BROKEN.
⊕ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
A PHOTOFACT STANDARD NOTATION SCHEMATIC
©Howard W. Sams & Co., Inc. 1952
ARTONE MODELS MST-12, MST14, 14TR, 16TR, 17CD (1st. Prod.), 17CRR (1st. Prod.), 17ROG (1st. Prod.), 20CD (1st. Prod.), 20TR, 112X, 203D (1st. Prod.), 312, 819, 3163CR, 8163CR, 8193CM

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DENVER, COLORADO

CHASSIS TOP VIEW

CHASSIS BOTTOM VIEW- CAPACITOR AND ALIGNMENT IDENTIFICATION

TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard may be eliminated by removing the horizontal oscillator tube, (V16), from its socket.

VIDEO IF ALIGNMENT

If the set has a two tube tuner, remove the converter tube,(V2) from its socket and replace it with a 6J6 which has pin 1 removed.
If the set has a three tube tuner, remove the oscillator tube, (V3), from its socket. This will disable the local oscillator and prevent the possibility of erroneous indications.
During video IF alignment the common lead of the VTVM is connected to approximately 3 volts with respect to chassis, avoid grounding the VTVM case.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube, or mixer tube, (see note above). Low side to chassis.	25.6MC	Any	DC probe to Point (A). Common to Point (B).	A1, A2	Adjust for maximum deflection.
2.	"	"	23.4MC	"	"	A3, A4	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
3.	Direct	High side to an ungrounded tube shield floating over dummy converter tube, (or mixer tube). Low side to chassis.	24MC (10MC SWP)	21.6MC 22.6MC 25.6MC 26.1MC	Any	Vert. Amp. to Point (A). Low side to chassis.		Check for response curve similar to fig. 1. If necessary retouch A1 thru A4 for proper response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

During sound IF alignment the common lead of the VTVM is connected to approximately 135 volts with respect to chassis, avoid grounding or touching the VTVM case.
Connect two matched 100KΩ (± 1%) resistors in series between Point C and Point D . The junction of these resistors is alignment Point F as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
4.	.001MFD.	High side to pin 4 (Grid) of 6AC7, (V8). Low side to chassis.	4.5MC (unmod.)	Any	DC probe to Point (C). Common to Point (D).	A5, A6, A7	Adjust for maximum deflection.
5.	"	"	"	"	DC probe to Point (E). Common to Point (F).	A8	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
4.	.001MFD.	High side to pin 4 (Grid) of 6AC7, (V8). Low side to chassis.	4.5MC (450KC SWP)	4.5MC	Any	Vert. Amp. to Point (C). Low side to chassis.	A5, A6, A7	Disconnect stabilizor capacitor C7. Adjust for maximum amplitude and symmetry as per fig. 2.
5.	"	"	"	"	"	Vert. Amp. to Point (E). Low side to chassis.	A8	Reconnect capacitor C7. Adjust A8 so 4.5MC occurs at center of crossover lines as per fig. 3. SLIGHTLY retouch A7 for maximum amplitude and straightness of crossover lines.

OSCILLATOR ALIGNMENT (TWO TUBE TUNER)

Remove the dummy converter tube and replace the original 6J6 in its socket.
Since all of the oscillator coils are in series it is essential that the highest channel to be adjusted is aligned first and progess towards the lowest channel.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC SWP)	211.25MC 215.75MC	13	Vert. Amp. to Point (A). Low side to chassis.	A9	Adjust to place sound marker as shown in fig. 4. The video marker should be at 50%
			207MC (10MC SWP)	205.25MC 209.75MC	12		A10	
			201MC (10MC SWP)	199.25MC 203.75MC	11		A11	
			195MC (10MC SWP)	193.25MC 197.75MC	10		A12	
			189MC (10MC SWP)	187.25MC 191.75MC	9		A13	
			183MC (10MC SWP)	181.25MC 185.75MC	8		A14	
			85MC (10MC SWP)	83.25MC 87.75MC	6		A15	
			79MC (10MC SWP)	77.25MC 81.75MC	5		A16	
			69MC (10MC SWP)	67.25MC 71.75MC	4		A17	
			63MC (10MC SWP)	61.25MC 65.75MC	3		A18	
			57MC (10MC SWP)	55.25MC 59.75MC	2		A19	

The RF portion of this tuner has been properly adjusted at the factory and is very stable. Alignment of this portion should not be required in the field.

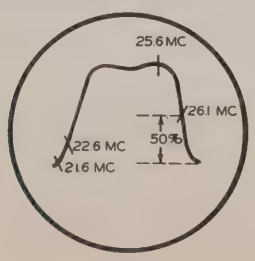


FIG. 1

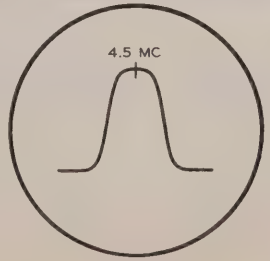


FIG. 2

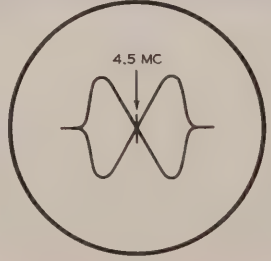


FIG. 3

ALIGNMENT INSTRUCTIONS (CONT.)

OSCILLATOR ALIGNMENT (THREE TUBE TUNER)

Replace the oscillator tube in its socket.
Since the channel two oscillator is in parallel with each of the other coils, it is essential that channel 2 be aligned first. The order of alignment for the remaining channels is not important.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	57MC (10MC SWP)	55.25MC 59.75MC	2	Vert. Amp. to Point (A). Low side to chassis.	A20	Adjust to place sound marker as shown in fig. 4. The video marker should be at 50%.
			63MC (10MC SWP)	61.25MC 65.75MC	3		A21	
			69MC (10MC SWP)	67.25MC 71.75MC	4		A22	
			79MC (10MC SWP)	77.25MC 81.75MC	5		A23	
			85MC (10MC SWP)	83.25MC 87.75MC	6		A24	
			177MC (10MC SWP)	175.25MC 179.75MC	7		A25	
			183MC (10MC SWP)	181.25MC 185.75MC	8		A26	
			189MC (10MC SWP)	187.25MC 190.75MC	9		A27	
			195MC (10MC SWP)	193.25MC 197.75MC	10		A28	
			201MC (10MC SWP)	199.25MC 203.75MC	11		A29	
			207MC (10MC SWP)	205.25MC 209.75MC	12		A30	
			213MC (10MC SWP)	211.25MC 125.75MC	13		A31	

The RF portion of this receiver has been properly aligned at the factory and is very stable. Alignment of this portion should not be required in the field.

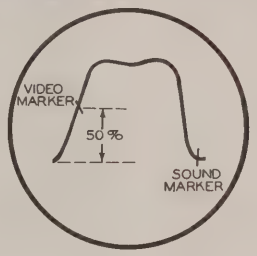
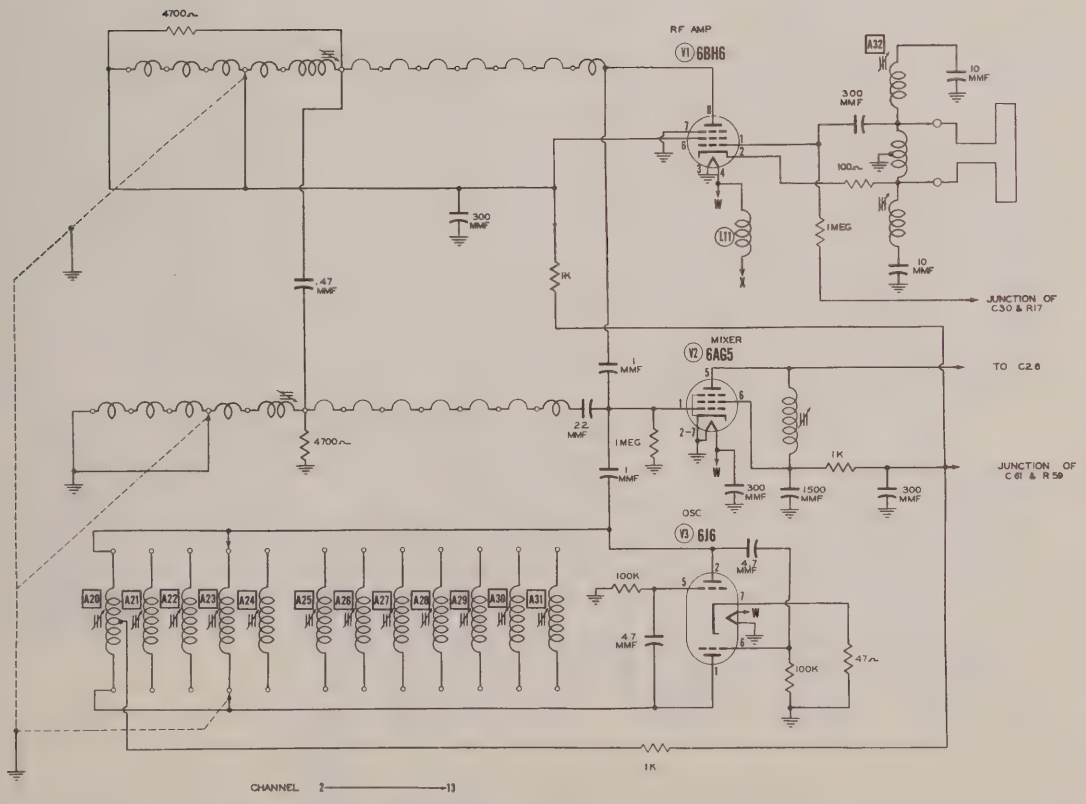


FIG. 4



3 TUBE TUNER SCHEMATIC

VOLTAGE AND RESISTANCE MEASUREMENTS

VOLTAGE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6J6	115VDC	115VDC	0V	6.2VAC	-.1VDC	-.1VDC	.4VDC		
V 2	6J6	90VDC	80VDC	6.3VAC	0V	-1.2VDC	§-7.5VDC	0V		
V 3	6J6	NOT USED IN ALL MODELS								
V 4	6AU6	-.1VDC	0V	6.3VAC	0V	125VDC	125VDC	.5VDC		
V 5	6CB6	-.1VDC	.5VDC	6.3VAC	0V	125VDC	125VDC	0V		
V 6	6CB6	0V	1.7VDC	6.2VAC	0V	125VDC	125VDC	0V		
V 7	6AL5	0V	-3VDC	6.3VAC	0V	-2.4VDC	0V	-.7VDC		
V 8	6AC7	0V	6.3VAC	2.2VDC	-2.4VDC	2.2VDC	165VDC	0V	160VDC	
V 9	12AU7	6.4VDC	0V	1.2VDC	0V	0V	360VDC	0V	20VDC	6.3VAC
V 10	6AU6	▲.6VDC	▲3.2VDC	▲0V	▲6.3VAC	▲200VDC	▲36VDC	▲3.2VDC		
V 11	6T8	▲-.3VDC	▲-.9VDC	▲-.3VDC	▲6.3VAC	▲0V	▲-1VDC	▲0V	▲-.7VDC	95VDC
V 12	6AQ5	▲-6.6VDC	▲0V	▲0V	▲6.3VAC	▲200VDC	▲205VDC	▲-6.6VDC		
V 13	‖SN7GT	§-31VDC §-45VDC	100VDC 185VDC	0V	§-.2VDC	460VDC	5VDC 25VDC	0V	6.3VAC	
V 14	■J5	NOT USED IN ALL MODELS								
V 15	6AL5	0V	0V	0V	6.3VAC	4.8VDC	0V	-3.8VAC		
V 16	6SN7GT	§.8VDC	330VDC	13VDC	§-2.1VDC §-4.3VDC	160VDC	13VDC	0V	6.3VAC	
V 17	6BQ6GT	0V	6.3VAC	13VDC	175VDC	-7.1VDC	17VDC	0V	17VDC	Top Cap *
V 18	‖W4GT	0V	0V	510VDC	0V	350VDC	130VDC	▲6.3VAC	▲0V	
V 19	1B3GT	* DO NOT MEASURE								
V 20	5U4GT	0V	410VDC	0V	380VAC	-3VDC	380VAC	0V	410VDC	
V 21	17BP4	6.3VAC	1.2VDC	PIN 10 350VDC	PIN 11 35VDC 140VDC	PIN 12 0V				

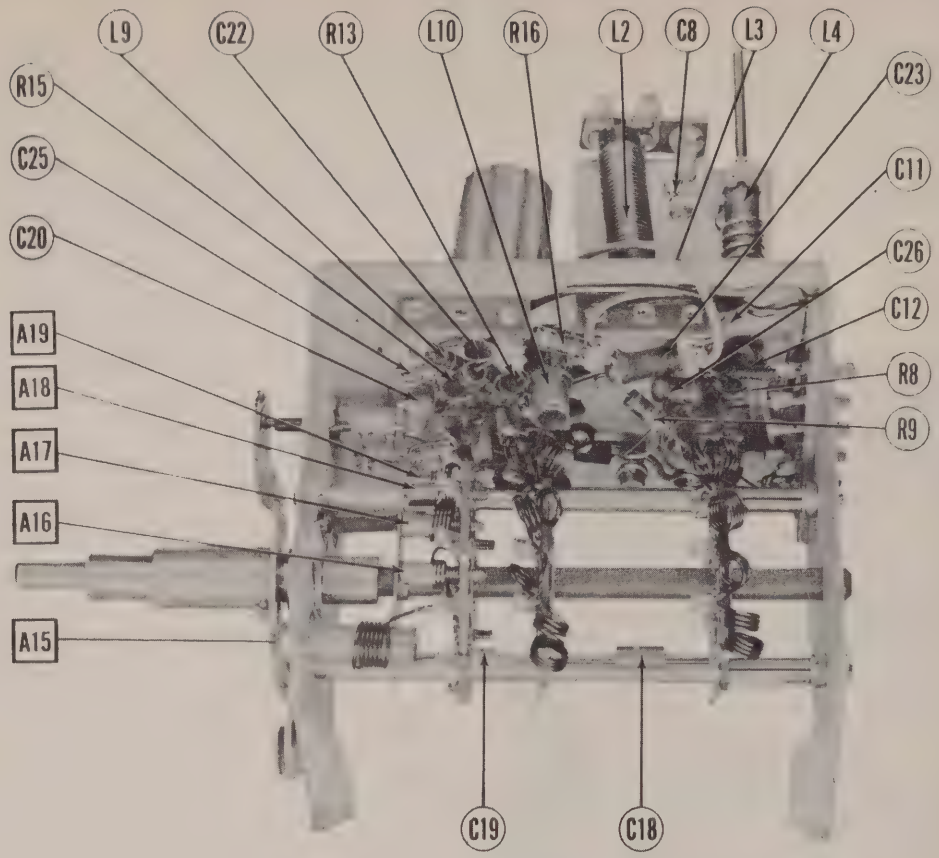
ALL MEASUREMENTS TAKEN WITH PICTURE TUBE REMOVED
▲ MEASURED FROM PIN 2 OF V12
* DO NOT MEASURE
§ TAKEN WITH VACUUM TUBE VOLTMETER

RESISTANCE READINGS

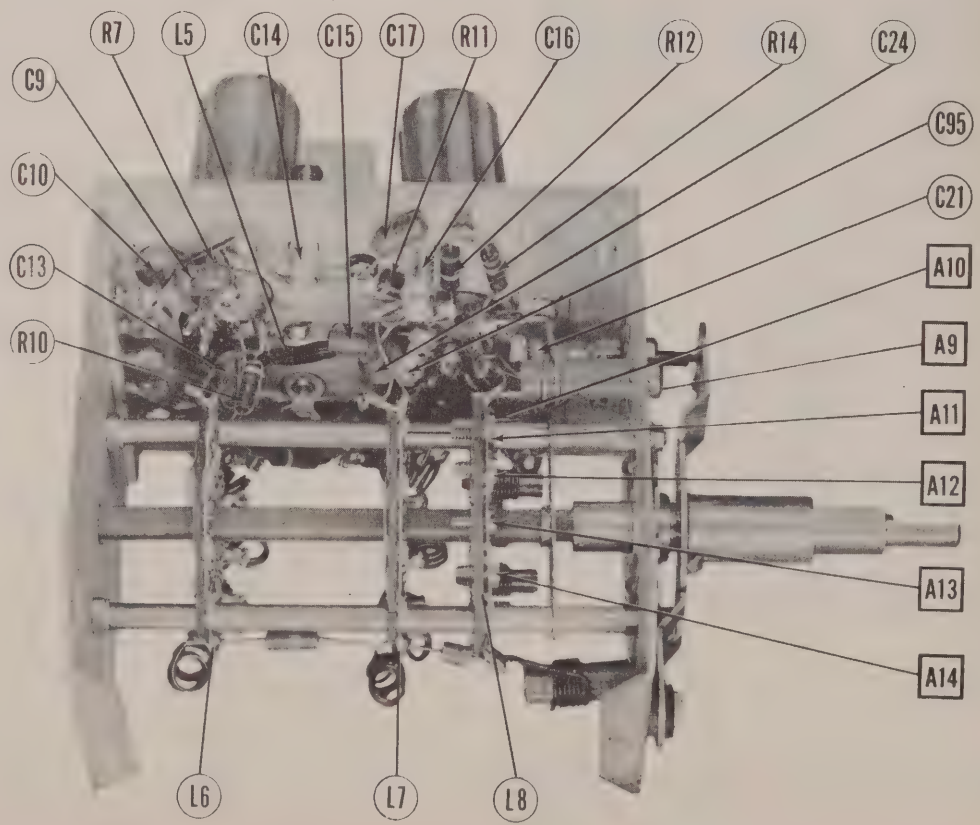
Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6J6	▲1KΩ	▲1KΩ	0Ω	.1Ω	1.8Meg	1.8Meg	47Ω		
V 2	6J6	▲5.7KΩ	▲11KΩ	.1Ω	0Ω	100KΩ	10KΩ	0Ω		
V 3	6J6	NOT USED IN ALL MODELS								
V 4	6AU6	1.7Meg	0Ω	.1Ω	0Ω	▲300Ω	▲300Ω	82Ω		
V 5	6CB6	1.7Meg	47Ω	.1Ω	0Ω	▲530Ω	▲530Ω	0Ω		
V 6	6CB6	.3Ω	180Ω	.1Ω	0Ω	▲430Ω	▲430Ω	0Ω		
V 7	6AL5	0Ω	¶1KΩ	.1Ω	0Ω	¶9.2KΩ	0Ω	680KΩ		
V 8	6AC7	0Ω	.1Ω	750Ω	¶9.3KΩ	750Ω	†11KΩ	0Ω	†16KΩ	
V 9	12AU7	47KΩ	0Ω	270KΩ	0Ω	0Ω	#30KΩ	1Meg	3.9KΩ	.1Ω
V 10	6AU6	▲470KΩ	▲1KΩ	▲0Ω	▲.1Ω	†1KΩ	▲23KΩ	▲1KΩ		
V 11	6T8	Inf.	▲39KΩ	Inf.	▲.1Ω	▲0Ω	Inf.	▲0Ω	1Meg	■330KΩ
V 12	6AQ5	280KΩ	▲0Ω	▲0Ω	▲.1Ω	■1.6KΩ	†0Ω	280KΩ		
V 13	6SN7GT	2.1Meg 1.1Meg	#3.3Meg #840KΩ	0Ω	2.2Meg	#4.3KΩ	5.3KΩ 330Ω	0Ω	.1Ω	
V 14	6J5	NOT USED IN ALL MODELS								
V 15	6AL5	1KΩ	1KΩ	0Ω	.1Ω	4.8Meg	0Ω	4.8Meg		
V 16	6SN7GT	5.1Meg	#28KΩ	1.8KΩ	118KΩ 68KΩ	#290KΩ	1.8KΩ	0Ω	.1Ω	
V 17	6BQ6GT	Inf.	.1Ω	0Ω	†12KΩ	680KΩ	5.6KΩ	0Ω	150Ω	Top Cap #68Ω
V 18	6W4GT	Inf.	Inf.	500KΩ	Inf.	†20Ω	22KΩ	▲.1Ω	▲0Ω	
V 19	1B3GT	PINS 1 THRU 8 HAVE INF. RESISTANCE								Top Cap #450Ω
V 20	5U4G	Inf.	20KΩ	Inf.	¶65Ω	15Ω	¶65Ω	Inf.	20KΩ	
V 21	17BP4	.1Ω	270KΩ	PIN 10 †0Ω	PIN 11 100KΩ 33KΩ	PIN 12 0Ω				

ALL MEASUREMENTS TAKEN WITH PICTURE TUBE REMOVED
† MEASURED FROM 350 VDC LINE
# MEASURED FROM PIN 3 OF V18
▲ MEASURED FROM PIN 2 OF V12
■ MEASURED FROM PIN 8 OF V20
¶ MEASURED FROM -3 VDC LINE

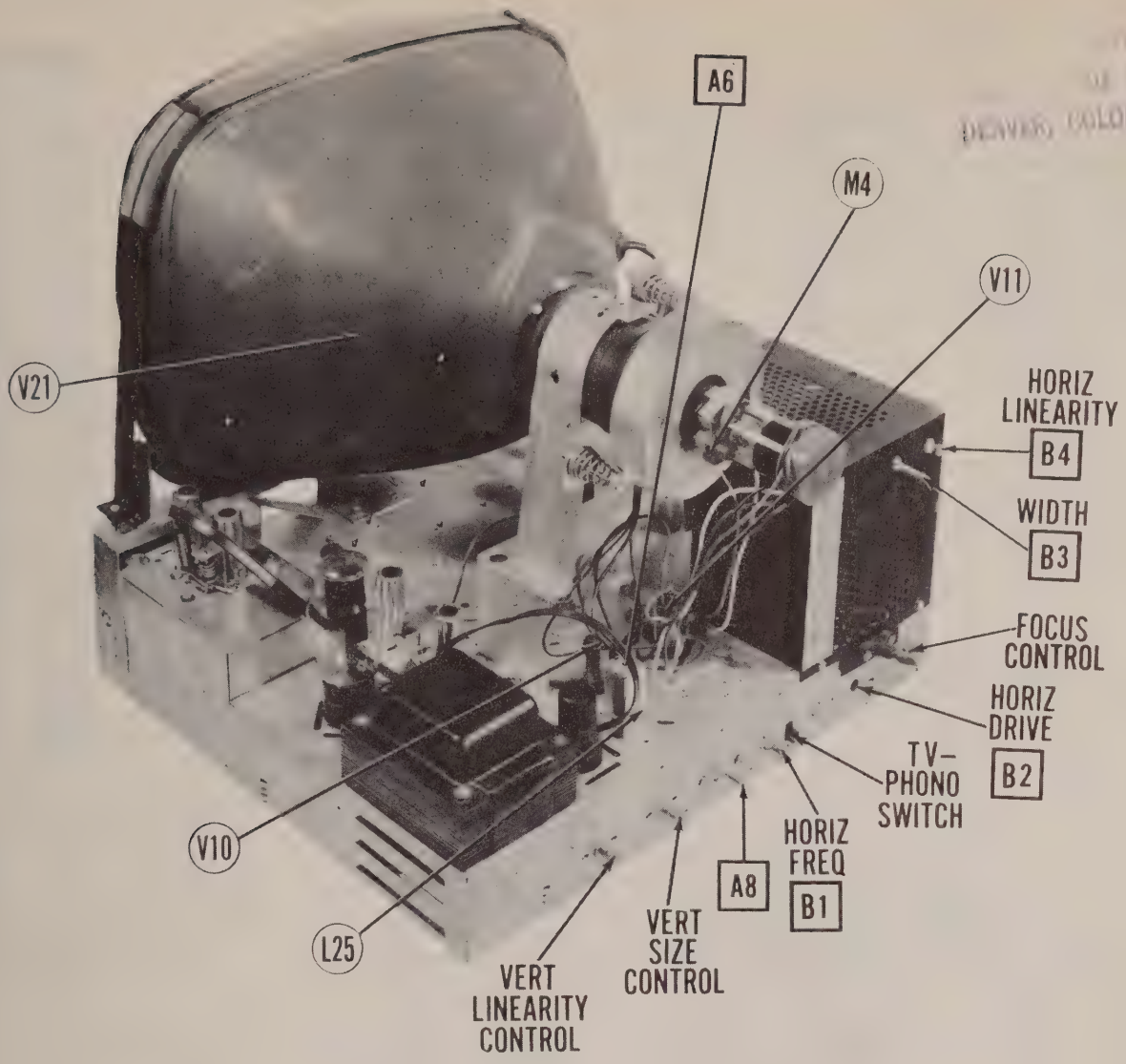
1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltage measured at 1,000 ohms.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. Front panels controls set at minimum.
6. Where readings may vary according to the setting of the service controls, both minimum and maximum readings are given.



2 TUBE RF TUNER-RIGHT SIDE



2 TUBE RF TUNER-LEFT SIDE



CHASSIS – TOP VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern, and turn the horizontal hold control to the mid position of its range. Adjust the horizontal frequency slug, (B1), to the center of the range over which the picture synchronizes horizontally. The picture should remain in synchronization over at least 1/4 rotation of the hold control.

Adjust the horizontal drive trimmer, (B2), counter-clockwise as far as possible without crowding or vertical lines appearing in the picture.

Adjust the width slug, (B3), until the picture is slightly wider than necessary to fill the mask.

Adjust the horizontal linearity slug, (B4), until the picture is symmetrical from left to right. Slight readjustment of B2 may be necessary to obtain optimum results.

FM TRAP ADJUSTMENT

If interference from a FM station is encountered, A32 may be adjusted to eliminate, or minimize, the interference. A32 requires no adjustment if no interference is present.

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: ARTONE PART No.	STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1A	RF Amplifier	6J6	6J6	7BF	
B	RF Amplifier	6BH6	6BH6	7CM	
V2A	Converter	6J6	6J6	7BF	
B	Converter	6AG5	6AG5	7BD	
C	Mixer	6BC5	6BC5	7BD	
V3	Oscillator	6J6	6J6	7BF	
V4	1st Video IF Amp.	6AU6	6AU6	7BK	
V5A	2nd Video IF Amp.	6CB6	6AU6	6CK	
B	2nd Video IF Amp.	6AU6	6CB6	7BK	
V6A	3rd Video IF Amp.	6CB6	6CB6	6CK	
B	3rd Video IF Amp.	6AU6	6AU6	7BK	
V7	Video Detector-AGC Rectifier	6AL5	6AL5	6BT	
V8	Video Amplifier	6AC7	8AC7	8N	
V9	DC Restorer-Sync Seperator	12AU7	12AU7	9A	
V10	Sound IF Amp.	6AU6	6AU6	7BK	
V11	Ratio Detector-AF Amplifier	6T8	6T8	9E	
V12	Audio Output	6AQ5	6AQ5	7BZ	
V13	Vert. Oscillator-Vertical Amp.	6SN7GT	6SN7GT	8BD	
V14	Vertical Amp.	6J5	6J5	6Q	
V15	Horiz. Phase Det.	6AL5	6AL5	6BT	
V16	Horiz. Mult.	6SN7GT	6SN7GT	8BD	
V17	Horiz. Output	6BQ6GT	6BQ6GT	6AM	
V18	Damper	6W4GT	6W4GT	4CG	
V19	HV Rectifier	1B3GT	1B3GT	3C	
V20	LV Rectifier	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: ARTONE PART No.	SYLVANIA PART No.	RTMA BASE TYPE	NOTES
V21A	17BP4	17BP4A ①	12D	① Outer coating must be grounded.
B	16RP4	16RP4	12D	
C	16TP4	16TP4	12D	
D	19BP4		12D	
E	19AP4	19AP4A	12D	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	VOLT	REPLACEMENT DATA: ARTONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	450	CEM-5	AFH 3-31		UP44445		TVL-3787	▲ Filter
B	40	450							■ Filter
C	40	450							▲ Filter
C2A	500	5	CEM-7	AFI80T10D		UPT5015		TVL-1415	■ Bias Filter
B	50	150				BRH505		TVA-1703	▲ Audio Output Cathode
C3	40	450	CET-4	PRS450/40		BR4045A		TVA-1712	Audio Output Dec.
C4A	20	450	CEM-6	AFH422Z2D		UP21l145		TVL-4766	▲ Decoupling
B	10	450							■ Vert. Amp. Decoupling
C	10	450							▲ Decoupling
D	10	150							Video Amp. Screen
C5	100	25	CET-5	PRS25/100		BRH251A		TVA-1207	Horiz. Output Cathode
C6	100	25	CET-5	PRS25/100		BRH251A		TVA-120	Vert. Amp. Cathode
C7	1	25	CET-6	E26E42		BR145		TVA-1300	Stabilizing Cap.
C8	10			S1l0NPO	TCZ-10		NPOK-100	STCC-Q1	Fixed Trimmer
C9	470			Sl470	D6-471		GP2K-471	5GA-T47	RF Coupling
C10	1500			BPD-0015	DD-152		801-0015	5HK-D15	RF Amp. Grid
C11	1500			BPD-0015	DD-152		801-0015	5HK-D15	AGC Filter
C12	1500			BPD-0015	DD-152		801-0015	5HK-D15	RF Amp. Filter
C13	270			Sl270	D6-271		GP2K-271	5GA-T27	RF Amp. Decoupling
C14	.5-3				829-3				Variable Trimmer
C15	1				TCZ-1		NPOK-010		RF Coupling
C16	1-6				839-7				Variable Trimmer
C17	270			Sl270	D6-271		GP2K-271	5GA-T27	RF Bypass
C18	.5				TCZ-.5		NPOK-OR5		RF Coupling
C19	2.2				TCZ-2.2		NPOK-2R2		Osc. Coupling
C20	39			Sl39	D6-390		GP1K-390		Osc. Feedback
C21	2.2				TCZ-2.2		NPOK-2R2		Fixed Trimmer
C22	270			Sl270	D6-271		GP2K-271	5GA-T27	Decoupling
C23	1500			Sl1500	D6-152		GP2L5-152	5HK-D15	RF Bypass
C24	1500			BPD-0015	DD-152		801-0015	5HK-D15	Conv. Filter
C25	10			S1l0NPO	TCZ-10		NPOK-100	STCC-Q1	Fixed Trimmer
C26	270			Sl270	D6-271		GP2K-271	5GA-T27	RF Coupling
C27	1000			Sl1000	D6-102	1W5D1	GP2L-102	5HK-D1	1st Video IF Dec. ¶
C28	2000		CC-22	BPD-002	DD-202	1W5D2	801-002	5HK-D2	1st Video IF Filter ¶
C29	100	500	CC-31	1468-0001	D6-101	5W5T1	GP1K-101	1FM-31	IF Coupling
C30	1000			Sl1000	D6-102	1W5D1	GP2L-102	5HK-D1	2nd Video IF Dec. ¶
C31	1000			Sl1000	D6-102	1W5D1	GP2L-102	5HK-D1	2nd Video IF Filter ¶
C32	1500			BPD-0015	DD-152	1W5D15	801-0015	5HK-D15	3rd Video IF Dec.
C33	1000			Sl1000	D6-102	1W5D1	GP2L-102	5HK-D1	3rd Video IF Filter ¶
C34	1500			BPD-0015	DD-152	1W5D15	801-0015	5HK-D15	3rd Video IF Cathode ¶
C35	5000			BPD-005	DD-502	1D5D5	811-005	5HK-D5	RF Bypass ¶
C36	1000			Sl1000	D6-102	1W5D1	GP2L-102	5HK-D1	RF Bypass *
C37	100		CC-31	Sl100	D6-101	5W5T5	GP1K-101	5GA-T1	AGC Filter
C38	120		CC-312	Sl120	D6-121	5R5T15	GP2K-121	5GA-T12	AGC Filter
C39	.1	600	CP-6-01	P688-1	DF-104	PTE6P1		BTM-P1	AGC Filter
C40	1000			Sl1000	D6-102	1W5D1	GP2L-102	5HK-D1	Bias Filter ¶
C41	.1	600	CP-6-01	P688-1	DF-104	PTE6P1		BTM-P1	Bias Filter
C42	.01	600	CP-6-11	P688-01	D6-103	PTE68I	GP2-333-103	6TM-S1	AGC Decoupling
C43	1000			Sl1000	D6-102	1W5D1	GP2L-102	5HK-01	AGC Decoupling *
C44	2000		CC-22	BPD-002	DD-202	1W5D2	801-002	5HK-D2	Video Det. Filter *

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	VOLT	REPLACEMENT DATA: ARTONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C45	5		CC-55	Sl5		5W5V5	GP1K-050		Video Diode Filter
C46	680		CC-368	Sl680	D6-681	2R5T7	GP2K-681	5GA-T68	Video Amp. Cathode
C47	470		CC-347	Sl470	D6-471	5R5T5	GP2K-471	5GA-T47	Video Amp. Cathode
C48	.1	600	CP-6-01	P688-1	DF-104	PTE6P1		6TM-P1	Video Coupling
C49	22	500	CM-422	1468-000025	D6-220	5R5Q25	GP1K-220	1FM-42	DC Rest. Plate
C50	.1	600	CP-6-01	P688-1	DF-104	PTE6P1		6TM-P1	Picture Tube Cathode
C51	39	500	CC-439	1468-00004	D6-390	5W5Q4	GP1K-390	1FM-44	Sound IF Coupling
C52	.02	600	CPM-6-12	P688-02	DF-203	PTE6S2		6TM-S2	Sound IF Cathode
C53	.022	1000		P1088-022		PTE16S25		MB-S22	Sound IF Plate †
C54	.005	600	CP-6-25	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Sound IF Screen
C55	.001	600	CP-6-21	P688-001	D6-101	PTE6D1	GP2L-101	6TM-D1	Diode Load Cap.
C56	.002	600	CP-6-22	P688-002	D6-202	PTE6D2	GP2 333-202	6TM-D2	De-Emphasis
C57	.005	600	CP6-25	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Audio Coupling
C58	.01	600	CP-6-11	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Audio Coupling
C59	.005	600	CP-6-25	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Audio Coupling
C60	.02	600	CPM-6-12	P688-02	DF-203	PTE6S2		6TM-S2	Audio Coupling
C61	.05	600	CP-6-15	P688-05	DF-503	PTE6S5		6TM-S5	Audio Output Grid
C62	.005	600	CP-6-25	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Audio Output Plate
C63	1000			S1l000	D6-102	1W5D1	GP2L-102	5HK-D1	RF Bypass *
C64	.01	600	CP-6-11	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Sync. Coupling
C65	.002	600	CP-6-22	P688-002	D6-202	PTE6D2	GP2-333-202	6TM-D2	Integrator Net.
C66	.005	600	CP-6-25	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Integrator Net.
C67	.005	600	CP-6-25	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Integrator Net.
C68	4700	800		1464-005	D6-472	1DR5D5	GP2-333-472	1FM-24	Vert. Sync. Coupling †
C69	.1	600	CP-6-01	P688-1	DF-104	PTE6P1		6TM-P1	Vert. Discharge
C70	.25	400	CP-4-025	P488-25		GT4P25		4TM-P25	Vert. Sweep Coupling
C71	.001	600	CP-6-21	P688-001	D6-102	PTE6D1	GP2L-102	6TM-D1	Horiz. Sync. Coupling
C72	.001	600	CP-6-21	P688-001	D6-102	PTE6D1	GP2L-102	6TM-D1	Horiz. Sync. Coupling
C73	.01	600	CP-6-11	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Integrator Net.
C74	.005	600	CP-6-25	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	AFC Filter
C75	.05	600	CP-6-15	P688-05	DF-503	PTE6S5		6TM-S5	AFC Filter
C76	3900	500	CM-239	1464-004	D6-402	1DR5D4	GP2-333-402	MB-24	Fixed Trimmer
C77	330	800	CM-333A	1469HV-00035					Horiz. MV Feedback
C78	220	1000	CM-332A	1469HV-00025					Horiz. Discharge
C79	820	500	CM-382	1464-0008		2R5T8		MS-38	Horiz. Sweep Coupling
C80	270	500	CM-327	1469-0003	D6-271	5R5T3	GP2K-271	1FM-325	Horiz. Output Screen
C81	.05	500	CP-6-15	P688-05	DF-503	PTE6S5		6TM-S5	Horiz. Output Screen
C82	.025	600	CO-6-125	P688-025		PTE16S25			Damper Filter
C83	.1	600	CP-6-01	P688-1	DF-104	PTE6P1		6TM-P1	Damper Filter
C84	.25	400	CP-4-025	P488-25		GT4P25		4TM-P25	Horiz. Sweep Coupling
C85	10	1500	CM-410A	1469HV-00001					Horiz. Feedback
C86	10	1500	CM-410A	1469HV-00001					Horiz. Feedback
C87	33	800							Fixed Trimmer *
C88	33	800							Fixed Trimmer *
C89	33	800							Fixed Trimmer *
C90	500	20000	CHV-35-15	HV20C	TV3-502				HV Filter
C91	.022	600		P688-022		PTE6S2		6TM-S22	Line Filter †
C92	.002	600	CP-6-22	P688-002	D6-202	PTE6D2	GP2-333-202	6TM-D2	AGC Filter *
C93	100	500		1468-0001	D6-101	5W5T1	GP1K-101	1FM-31	IF Coupling *
C94	100	500		1468-0001	D6-101	5W5T1	GP1K-101	1FM-31	IF Coupling *
C95	10			S1l0NPO	TCZ-10		NPOK-100	STCC-Q1	Osc. Coupling
C96	.1	600	CP-6-01	P688-1	DF-104	PTE6P1		6TM-P1	Fixed Trimmer *

* Not used in all models.
† Some models use .02MFD 600V in this application. (Mfgrs. part No. CP-6-12)
‡ Some models use .005MFD 600V in this application. (Mfgrs. part No. CP-6-25)
¶ Some models use 2000MMF in this application. (Mfgrs. part No. CC-22)

CONTROLS

ITEM No.	RATING: RESISTANCE	WATTS	REPLACEMENT DATA: ARTONE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	500KΩ	½	P-7	Q13-133	AG-60-Z	B-60-S	Volume Control
B	Shaft		Not req.	Not req.	FS-3	Not req.	Attach to R1A per instructions
C	Switch		Not req.	76-1	SWB	Not req.	Attach to R1A per instructions
R2A	1Meg	½		Concentrikit‡			Vert. Hold Control - Front
B	50KΩ	½	PD-5	Bil-137 ‡	RTV-146	SBB-584	Horiz. Hold Control - Rear
C	Shaft end			Bil-123 ‡			Attach per instructions in Concentrikit
R3A	750Ω	2	PD-4	E-187 ‡	RTV-145		Contrast Control - Wire Wound - Front
B	100KΩ	½					Brightness Control - Rear
R4A	5000Ω	½	P-2	Q11-114	AM-19-S	AN-10	Vert. Linearity Control
B	Shaft		Not req.	Not req.	FKS-1/4	AK-1	Attach to R4A per instructions
R5A	2.5Meg	½	P-5	Q11-239	AM-84-S	AN-83	Height Control
B	Shaft		Not req.	Not req.	FKS-1/4	AK-1	Attach to R5A per instructions
R6	1500Ω	4	P-6		RTV-6	SVP-994	Focus Control - Wire Wound

‡ Additional parts to be used with Concentrikit.

RESISTORS

ITEM No.	RATING: RESISTANCE	WATTS	REPLACEMENT DATA: ARTONE PART No.	IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ± 10% UNLESS OTHERWISE SPECIFIED
R7	47Ω	20%			Parasitic Suppressor
R8	150KΩ	20%			RF Amp. Grid
R9	1000Ω			BTS-1000	RF Amp. Decoupling
R10	4700Ω	20%		BTS-4700	RF Coil Shunt
R11	100KΩ	20%		BTS-100K	Series Test Point
R12	100KΩ	20%			Mixer Grid
R13	10KΩ				Mixer Plate
R14	10KΩ				Osc. Grid
R15	4700Ω	20%		BTS-4700	Osc. Plate
R16	1000Ω			BTS-1000	Decoupling
R17	330Ω	20%	RC-331-2	BTS-330	AGC Network
R18	8200Ω		RC-822-2	BTS-8200	1st. Video IF Amp. Grid - See Note 2
R19	82Ω		RC-820-2	BTS-82	1st. Video IF Amp. Cathode
R20	100Ω		RC-101-2	BTS-100	1st. Video IF Amp. Decoupling
R21	8200Ω		RC-822-2	BTS-8200	2nd. Video IF Amp. Grid
R22	47Ω	20%	RC-470-2		2nd. Video IF Amp. Cathode - See Note 3
R23	330Ω	20%	RC-331-2	BTS-330	2nd. Video IF Amp. Decoupling
R24	100Ω		RC-101-2	BTS-100	Decoupling
R25	6800Ω		RC-682-2		3rd. Video IF Transformer Shunt - See Note 7
R26	180Ω	20%	RC-181-2	BTS-180	3rd. Video IF Amp. Cathode
R27	330Ω		RC-331-2	BTS-330	3rd. Video IF Amp. Decoupling
R28	22KΩ	20%	RC-223-2		4th. Video IF Transformer Shunt
R29	100Ω		RC-101-2	BTS-100	Decoupling
R30	39KΩ	1	RC-393-5	BTA-39K	Voltage Divider
R31	680KΩ	½	RC-684-2	BTS-680K	AGC Load
R32	1Meg	½	RC-105-2	BTS-1Meg	AGC Network
R33	1000Ω	½	RC-102-2	BTS-1000	Bias Network
R34	8200Ω	½	RC-822-2	BTS-8200	Video Det. Diode Load
R35	120Ω	½	RC-121-2		Parasitic Suppressor
R36	44KΩ	2	RC-443-8		Video Amp. Screen
R37	44KΩ	2	RC-443-8		Video Amp. Screen
R38	54KΩ	2	RC-543-8		Video Amp. Plate
R39	54KΩ	2	RC-543-8		Video Amp. Plate
R40	5600Ω	1	RC-562-5	BTA-5600	Decoupling
R41	22KΩ	20% ½	RC-223-5	BTA-22K	Voltage Divider
R42	270KΩ	½	RC-274-2	BTS-270K	DC Restorer Load
R43	220KΩ	½	RC-224-2	BTS-220K	Voltage Divider
R44	2200Ω	½	RC-222-2	BTS-2200	Picture Tube Grid
R45	33KΩ	½	RC-333-2	BTS-33K	Picture Tube Cathode
R46	470KΩ	½	RC-474-2	BTS-470K	Sound IF Amp. Grid
R47	1000Ω	½	RC-102-2	BTS-1000	Sound IF Amp. Cathode
R48	100KΩ	20% ½	RC-104-2	BTS-100K	Sound IF Amp. Screen
R49	1000Ω	½	RC-102-2	BTS-1000	Sound IF Amp. Decoupling
R50	22KΩ	½	RC-223-2	BTS 22K	Voltage Divider
R51	39KΩ	½	RC-393-2	BTS-39K	Ratio Det. Diode Load - See Note 4
R52	15KΩ	½	RC-153-2	BTS 15K	De-emphasis
R53	2.7Meg	½	RC-275-5	BTA-2.7Meg	Phono Input Shunt
R54	470KΩ	½	RC-474-2	BTS 470K	AF Amp. Grid
R55	330KΩ	½	RC-334-2	BTS-330K	AFAmp. Plate
R56	100KΩ	½	RC-104-2	BTS 100K	Output Grid
R57	330KΩ	5% ½	RC-334-3	BTS 330K-5%	Bias Network
R58	180KΩ	5% ½	RC-184-3	BTS 180K-5%	Bias Network
R59	4700Ω	½	RC-472-2	BTS-4700	Voltage Divider
R60	470KΩ	½	RC-474-2	BTS-470K	Voltage Divider
R61	390Ω	½	RC-391-5	BTA-390	Decoupling
R62	820KΩ	½	RC-824-3	BTS-820K	Sync. Sep. Plate
R63	47KΩ	½	RC-473-2	BTS-47K	Voltage Divider
R64	1Meg	½	RC-105-2	BTS-1Meg	Sync. Amp. - Phase Inv. Grid
R65	3900Ω	20% ½	RC-392-2	BTS-3900	Sync. Amp. - Phase Inv. Cathode
R66	3900Ω	½	RC-392-2	BTS-3900	Sync. Amp. - Phase Inv. Plate
R67	3900Ω	20% ½	RC-392-5	BTS-3900	Sync. Amp. - Phase Inv. Plate
R68	22KΩ	½	RC-223-2	BTS-22K	Integrator
R69	8200Ω	½	RC-822-2	BTS-8200	Integrator
R70	8200Ω	½	RC-822-2	BTS-8200	Integrator
R71	1Meg	½	RC-105-2	BTS-1Meg	Vert. Osc. Grid
R72	820KΩ	½	RC-824-2	BTS-820K	Vert. Osc. Plate
R73	2.2Meg	½	RC-225-2	BTS-2.2Meg	Vert Amp. Grid
R74	330Ω	½	RC-331-2	BTS-330	Vert. Amp. Cathode
R75	3600Ω	2			Vert. Amp. Decoupling - See Note 6
R76	3900Ω	½	RC-392-2	BTS-3900	Vert. Peaking
R77	6.8Meg	½	RC-685-2	BTS-6.8Meg	Vert. Feedback
R78	22KΩ	½	RC-223-5	BTA-22K	Decoupling
R79	100KΩ	½	RC-104-2	BTS-100K	Horiz. Phase Det. Diode Load
R80	100KΩ	½	RC-104-2	BTS-100K	Horiz. Phase Det. Diode Load
R81	4.7Meg	½	RC-475-2	BTS-4.7Meg	Horiz. Phase Det. Diode Load
R82	27KΩ	½	RC-273-2	BTS-27K	Horiz. Phase Det. Diode Load
R83	470KΩ	½	RC-474-2	BTS-470K	Horiz. AFC Filter
R84	1800Ω	½	RC-182-2	BTS-1800	Horiz. MV Cathode
R85	5600Ω	½	RC-562-2	BTS-5600	Horiz. MV Plate
R86	68KΩ	½	RC-683-2	BTS-68K	Horiz. MV Grid
R87	270KΩ	½	RC-274-2	BTS-270K	Horiz. MV Plate
R88	22KΩ	1	RC-223-5	BTA-22K	Horiz. MV Decoupling
R89	5600Ω	½	RC-562-2	BTS-5600	Horiz. Peaking
R90	98Ω	½	RC-680-2		Parasitic Suppressor
R91	680KΩ	½	RC-684-2	BTS-680K	Horiz. Output Grid
R92	33Ω	1		BW-1-33	Horiz. Output Cathode
R93	120Ω	2	RC-121-8	BW-2-102	Horiz. Output Cathode
R94	12KΩ	5	RW-123-11	13.4A-12K	Horiz. Output Screen
R95	18KΩ	2	RC-183-8	BTB-18K	Horiz. Feedback
R96	3.3Ω	½	RC-336-2		HV Rectifier Filament
R97	680KΩ	2	RC-684-8		HV Filter
R98	750Ω	2	RC-751-8		Focus Coil Shunt - See Notes 5 and 6
R99	150	1	RC-150-5	BW-1-15	Bias Network
R100	100KΩ	2	RC-104-8	BTB-100K	Isolation
R101	100KΩ	½	RC-104-2	BTS-100K	Voltage Divider
R102	1200Ω	2	RC-122-8	BTB-1200	Focus Coil Shunt - See Note 1

Note 1 Not used in all models.
Note 2 Some models use 10KΩ resistor in this application.
Note 3 Some models use 82Ω resistor in this application.
Note 4 Some models use 44KΩ resistor in this application.
Note 5 Some models use 100Ω resistor in this application.
Note 6 Some models use parallel resistors in this application to obtain desired value.
Note 7 Some models use 8200Ω resistor in this application.

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	SEC. 1	SEC. 2	SEC. 3	REPLACEMENT DATA: ARTONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC ② 1.85A	780VCT .200ADC	5VAC ③3A	6.3VAC ②2.5A SEC. 3 6.3VAC ③5.6A	T-106	PM8412 P-5014 ②	P-3067	PV-200 and F-633 ③

② Mount separately and use for SEC. 3.
③ New mounting holes.

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	RATING DC RESISTANCE SEC.	REPLACEMENT DATA ARTONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T2	170Ω	970Ω	T-104	A-8111 ①	A-3000	TB0-3①	Vert. Block Osc. Trans.
T3	425Ω	23Ω	T-111		HV0-6		Horiz. Output Trans.
	Tap 40Ω	Tap 17.5Ω					
		SEC. 2					
		0Ω					
T4	670Ω	6Ω	T-112	A-8112 ①	A-3038 ①	TS0-5 ①	Vert. Output Trans.
T5A	19Ω		DY-6	DY-7	MDF-70		Horiz. Deflection Coils.
B	64Ω						Vert. Deflection Coils.
T6	350Ω				MF-2		Focus Coil

① Drill one new mounting hole.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	IMPEDANCE SEC.	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA ARTONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T7	5.6KΩ	3.2Ω	420Ω	.72Ω	T-102	A-3878	A-2930	R0-9 ①	① Drill one new mounting hole.

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D. C. RESISTANCE	RATINGS INDUCTANCE (0 CURRENT 1000 ~)	REPLACEMENT DATA ARTONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
L1	.200A	64Ω	4HΩ	LC-3	C-2325 ①	C-2991 ①	TR4200①	① Drill one new mounting hole.

COILS (RF-IF)

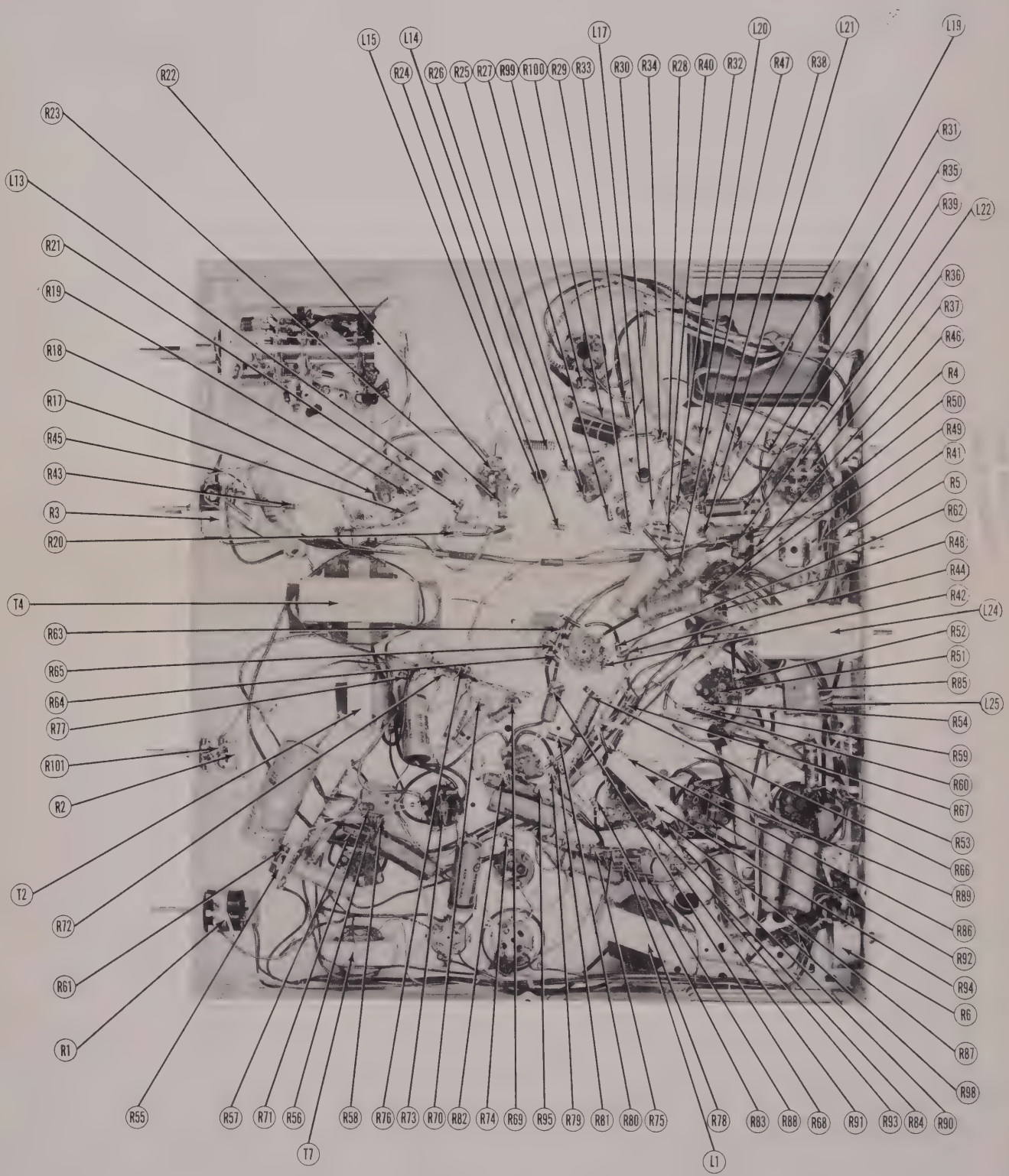
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA ARTONE PART No.	MERIT PART No.	IRC PART No.	NOTES
L2	Ant. Trans.	1.3Ω	1.3Ω				
L3	RF Choke	.59Ω				CLA	.82 Microhenry
L4	Ant. Coil	0Ω					
L5	Fil. Choke	0Ω					
L6	RF Coils	0Ω					
L7	Mixer Grid Coils	0Ω					
L8	Osc. Coils	0Ω					
L9	RF Choke	0Ω					
L10	1st Video IF	.6Ω					
L11	Fil. Choke	0Ω		LC-1			Not used in all models.
L12	Fil. Choke	0Ω		LC-1			Not used in all models.
L13	2nd Video IF	.2Ω		LV-6			
L14	Fil. Choke	0Ω		LC-1			
L15	3rd Video IF	.3Ω	.3Ω				
L16 (A)	RF Choke			LC-4			Some models use L16 (A) and (B) in lieu of L15.
(B)	3rd Video IF	.2Ω		LV-6			
L17	4th Video IF	.3Ω	.3Ω				
L18 (A)	RF Choke			LC-4			Some models use L18 (A) and (B) in lieu of L17.
(B)	4th Video IF	.2Ω		LV-6			
L19	Peaking	6Ω		LP-5			Green Dot
L20	Peaking	11Ω		LP-6			Red Dot
L21	Peaking	12Ω		LP-8			Blue Dot
L22	Peaking	7Ω		LP-7			Coil wound on 13KΩ resistor (yellow dot).
L23	1st Sound IF	2.5Ω	2.5Ω	LTO-3			
L24	Disc. Trans.	6Ω	.6Ω	LRD-1			Tap .6Ω
L25	Horiz. Freq.	50Ω		LHO-2			
L26	Width Coil	29Ω	30Ω	L-M77J4-3			
L27	Horiz. Lin.	28Ω		L-M77J-4			

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA ARTONE PART No. FUSE	ARTONE PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER	
M1	3AG Pigtail	.375A			318.375		GJV-3/8		

MISCELLANEOUS

ITEM No.	PART NAME	ARTONE PART No.	NOTES
M2A	RF Tuner	TT-6	
B	RF Tuner	TT-3	Used in some models
M3	Switch		TV-Phono
M4	Ion Trap	IT-1	
B2	Trimmer	CT-1	25-280 MFD (Horiz. Drive)

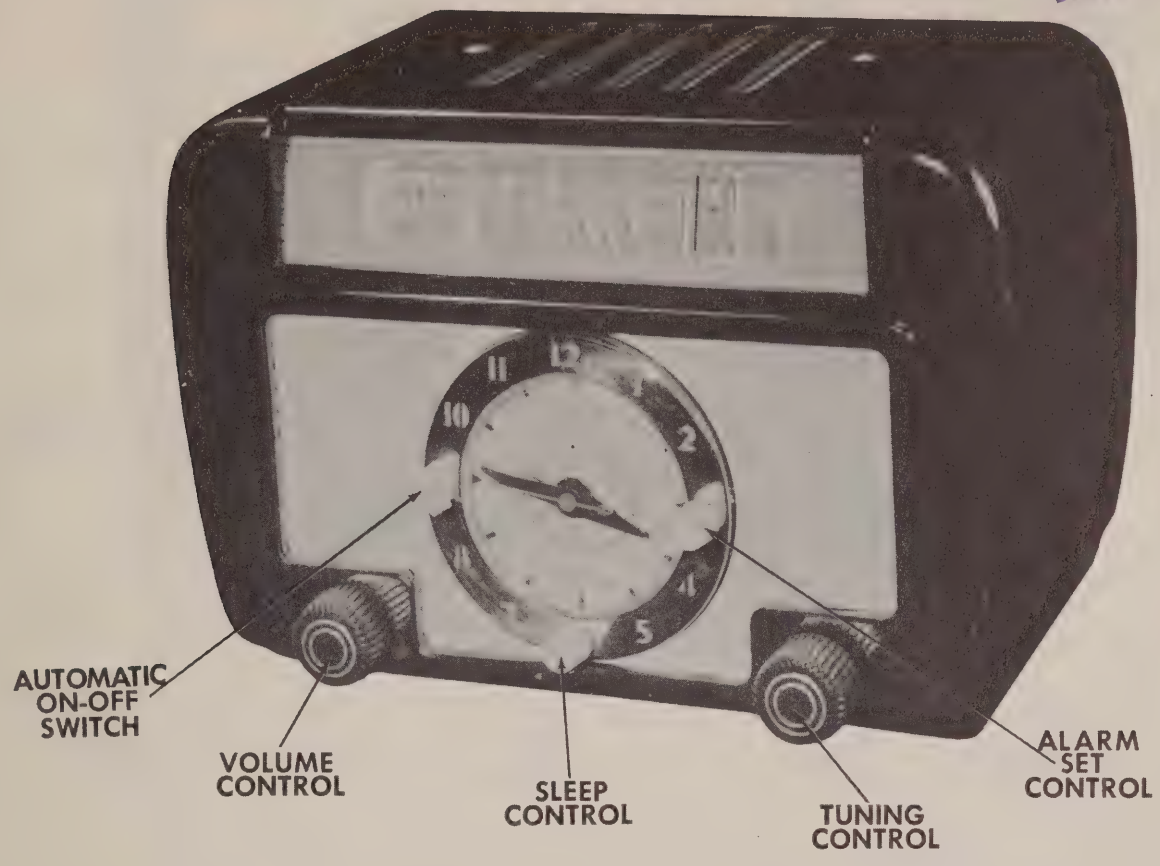


CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

DEWALD MODEL F-523

PROPERTY OF
L. F. BLANKEN
3924 MEAD
DENVER, COLO.

DEWALD
MODEL F-523



DEWALD
MODEL F-523

TRADE NAME	DeWald Model F-253
MANUFACTURER	DeWald Radio Mfg. Co., 35-15 37th. Ave., Long Island City, N.Y.
TYPE SET	AC Operated AM Superheterodyne Receiver With Electric Clock
TUBES (Five)	Types 12BE6 Conv., 12BA6 IF Amp., 12AT6 or 12AV6 Det.-AVC-AF Amp., 50B5 Audio Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC-60 Cycle RATING .23 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	525 - 1700 KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

With tuning gang fully open set pointer 1 3/8 inches from right hand side of dial back plate.
Use isolation transformer if available.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	Direct	Loop	455 KC (400~ Mod.	Any	Across voice coil	A1, A2, A3, A4	Fashion loop of several turns of wire and radiate signal into loop of receiver.
2.	"	"	1720 KC	Tuning gang fully open	"	A5	Adjust for maximum output.
3.	"	"	1500 KC	Tune for 1500 KC signal	"	A6	Adjust for maximum output.

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed."
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PARTS LIST AND DESCRIPTIONS

DEWALD MODEL F-253

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: DEWALD PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amplifier	12BA6	12BA6	7BK	
V3A	Det.-AVC-AF Amp	12AV6	12AV6	7BT	
B	Det.-AVC-AF Amp	12AT6	12AT6	7BT	
V4	Audio Output	50B5	50B5	7BZ	
V5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: DEWALD PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	30	150		AFH2-11		UP3315		TVL-2422	■ Filter
B	30	150							▲ Filter
C2	.05	400		P488-05	DF-503	PTE4S5		4TM-S5	Osc. Anode Bypass
C3	.05	400		P488-05	DF-503	PTE4S5		4TM-S5	AVC Filter
C4	220			SI220	D6-221	5W5T25	GP2K-221	5GA-T22	Diode RF Filter
C5	5000			BPD-005	DD-502	TM5D5	811-005	5HK-D5	Audio Coupling
C6A	.005								Audio Coupling
B	250				♦ PC-70				AF Amp. Plate Bypass
C									Audio Output Plate
C7	.02	400		P488-02	DF-203	PTE4S2		4TM-S2	Audio Output Plate
C8	.05	400		P488-05		PTE4S5		4TM-S5	Line Filter

♦ Items C6A, C6B, C5C, R6A, R6B are combined in one unit
When replacing items seperately, C6B and C6C should total 250MMF

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: DEWALD PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	500KΩ	½	3073A-5	QJ3-133	AG-60-Z	BSK-60	Volume Control
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Attach to R1A per instructions

RESISTORS

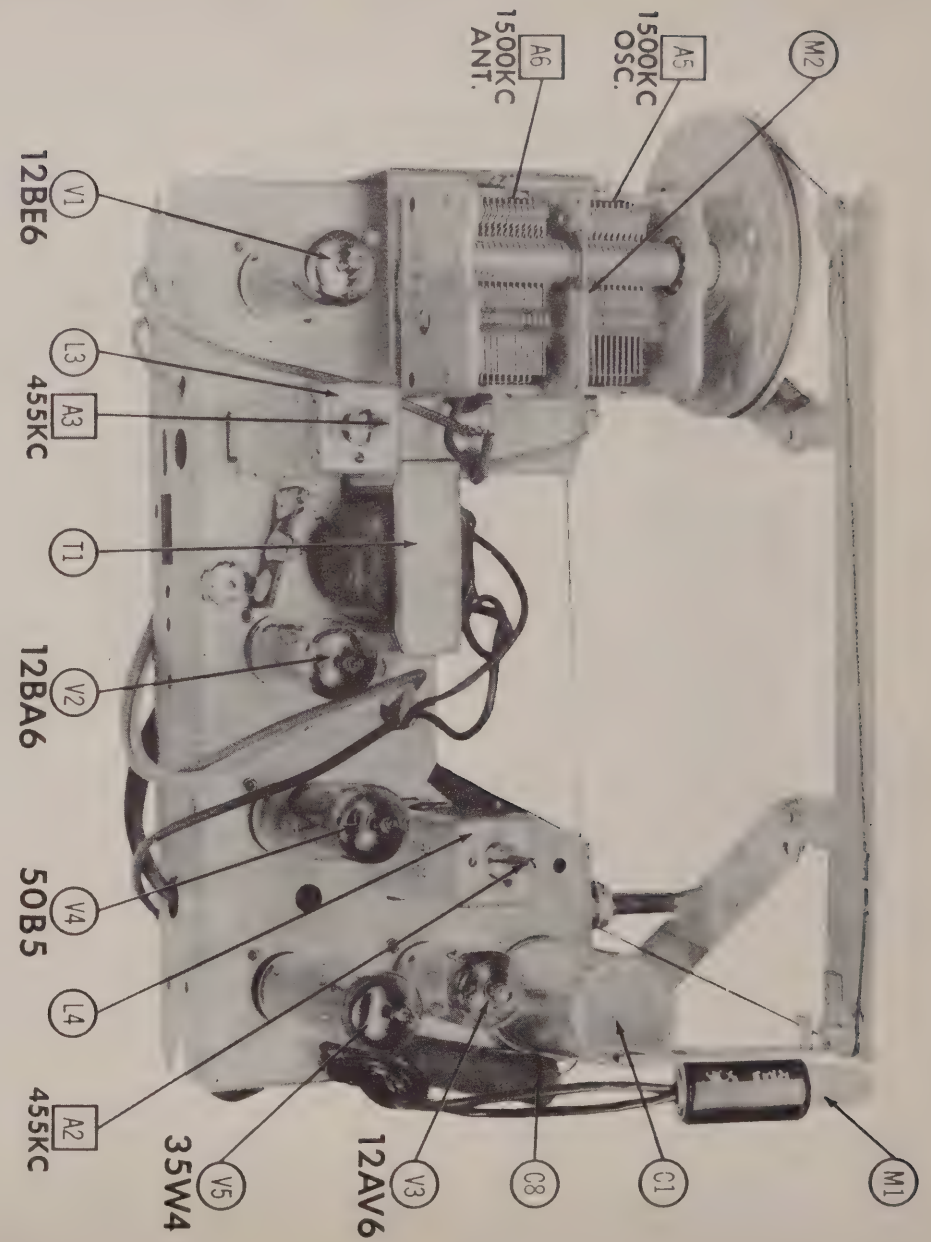
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: DEWALD PART No.	IRC PART No.	IDENTIFICATION CODES
R2	22KΩ	½			Osc. Grid
R3	2.2Meg	½		BTS-2.2Meg	AVC Network
R4	2.7Meg	½		BTS-2.7Meg	AF Amp. Grid - See Note 1
R5	2.7Meg	½		BTS-2.7Meg	AF Amp. Grid - See Note 2
R6A	500KΩ	½	♦		AF Amp. Plate
B	500KΩ	½			Output Grid
R7	150Ω	1		BTA-150	Output Cathode
R8	2700Ω	1		BTA-2700	Filter
R9	150Ω	½		BTS-150	Rectifier Ballast - See Note 2
R10	470Ω	½		BTS-470	Converter Cathode - See Note 2

♦ Items R6A, R6B, C6A, C6B, C6C are combined in one unit
Note 1. Some Models use a 4.7Meg Resistor in this application
Note 2. Not used in all Models

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING: IMPEDANCE PRI.	RATING: IMPEDANCE SEC.	RATING: DC RES. PRI.	RATING: DC RES. SEC.	REPLACEMENT DATA: DEWALD PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T1	2.2KΩ	3.5Ω	180Ω	.7Ω	1048	A-3876	A-2928	RO-2	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	DE WALD PART No.	JENSEN PART No.	QUAM PART No.	
SP1A	PM	3.5Ω	7009-2 7009-①	ST-113 (Mod. P4-X)	4A1	① Alternate Speaker
	CONE DIA.	V. C. DIA.				
SP1B	4"	9/16"				

COILS (RF-IF)

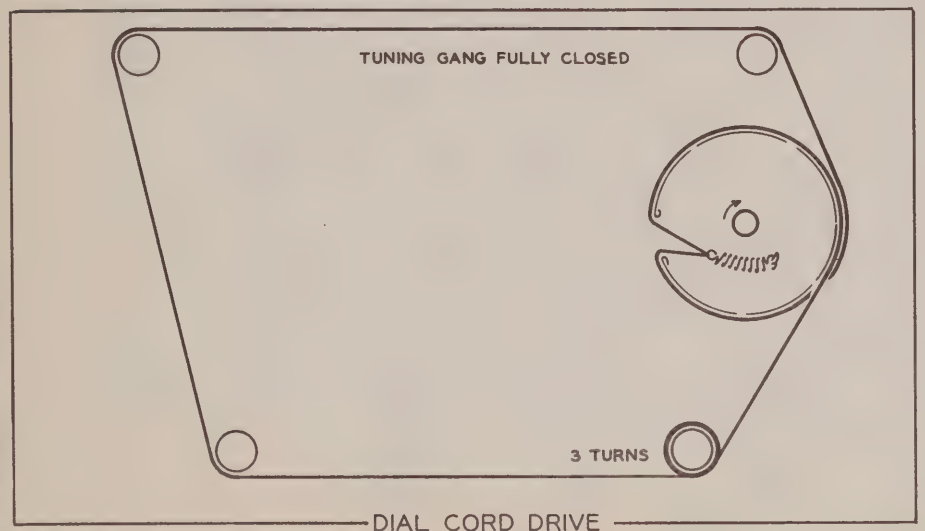
ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	DEWALD PART No.	MERIT PART No.	
L1	Loop Ant.	2.4Ω		1073		
L2	Osc. Coil	5.3Ω		1028		Tap@.6Ω
L3	Input IF	18Ω	19.5Ω	1091B-4	BC-352	
L4	Output IF	5.8Ω	5.8Ω	1091B-1	BC-353	

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					DEWALD PART No.		
M1	Bayonet	6-8	.15	Brown			Type #47

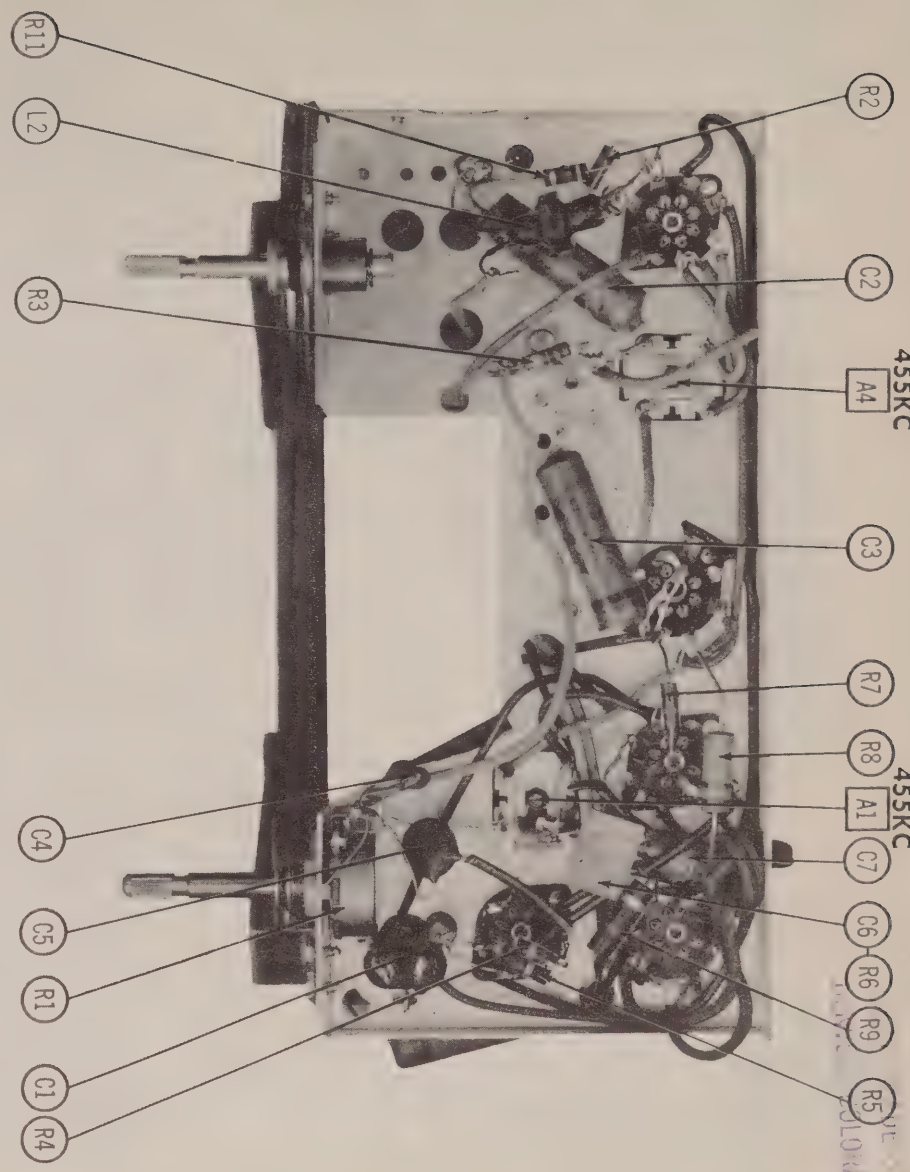
MISCELLANEOUS

ITEM No.	PART NAME	DEWALD PART No.	NOTES
M2	2 Gang Var. Cap.	2003	(16-462MMF, 31-200MMF)
	Cabinet	4077	
	Clock	8081	
	Dial Scale	6049	



DIAL CORD DRIVE

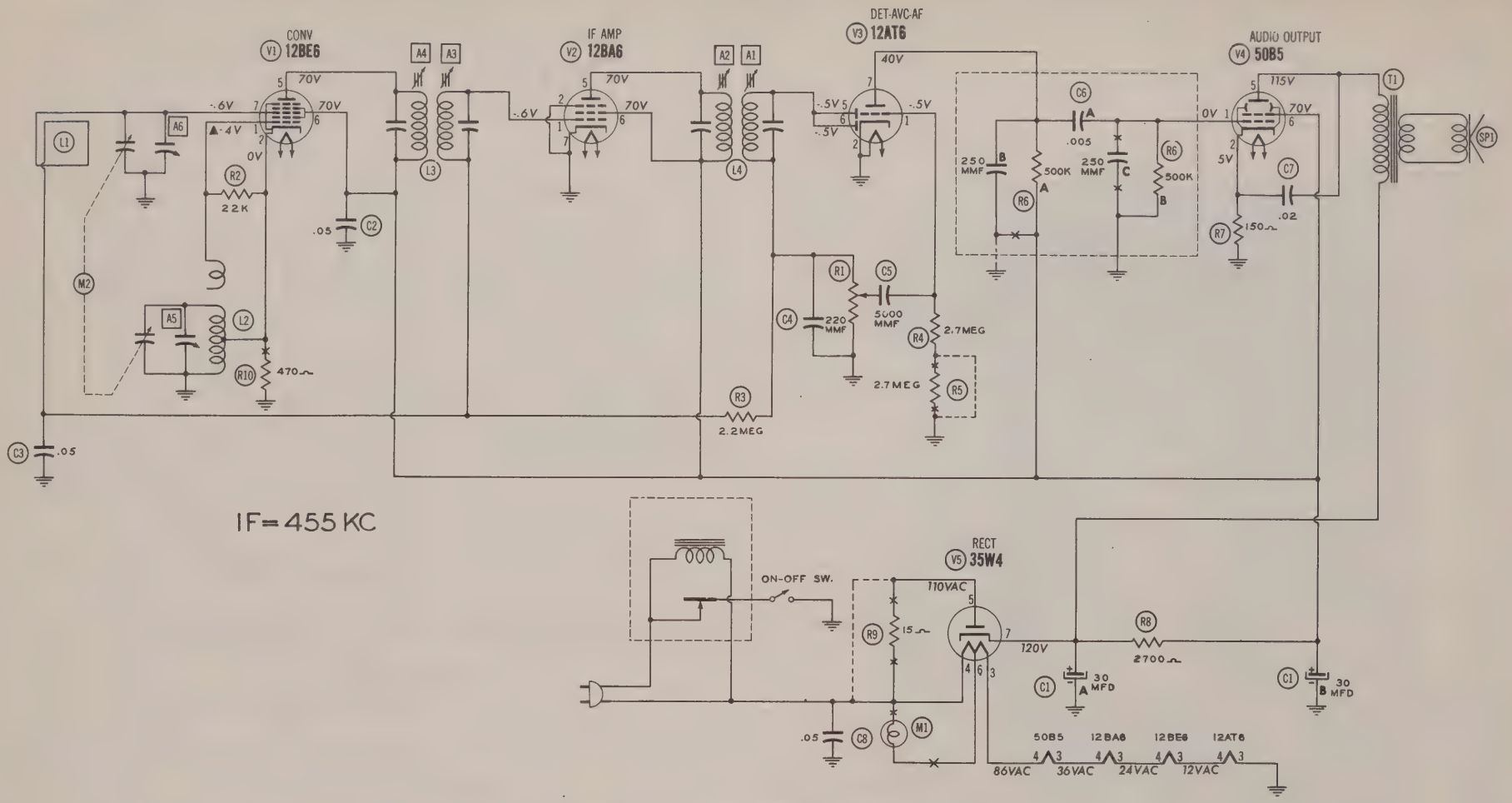
CHASSIS—BOTTOM VIEW



SET 170 FOLDER 5

DEWALD MODEL F-253

DEWALD MODEL F-253



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	22KΩ	.6Ω	12Ω	24Ω	†2.7KΩ	†2.7KΩ	2.7Meg
V 2	12BA6	2.7Meg	0Ω	24Ω	36Ω	†2.7KΩ	†2.7KΩ	0Ω
V 3	12AV6	5.4Meg	0Ω	0Ω	12Ω	500KΩ	500KΩ	†500KΩ
V 4	50B5	500KΩ	150Ω	36Ω	86Ω	†180Ω	†2.7KΩ	500KΩ
V 5	35W4	INF.	0Ω	86Ω	121Ω	136Ω	103Ω	60KΩ

† MEASURED FROM PIN 7 OF V 5
▲ TAKEN WITH VACUUM TUBE VOLTMETER

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PROPERTY OF
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3924 MEADE ST.
DENVER, COLORADO

EKOTAPE
MODELS 101-8, 101-9, 102-9, 103-8

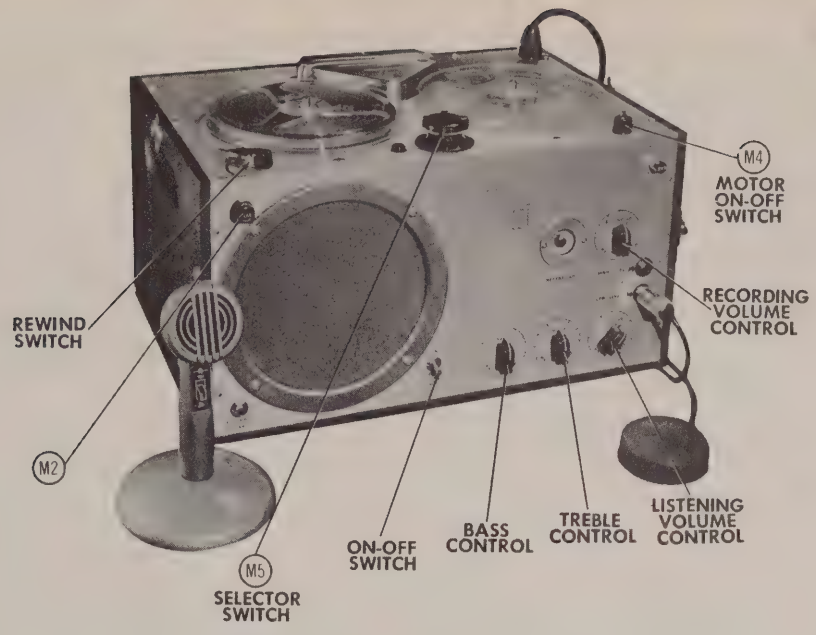

Figure 1 Complete Unit

GENERAL INFORMATION

The Webster Electric "Ekotape" Recorder is designed to magnetically record and play back a recording on a standard 5" or 7" reel of tape at the speed of 7-1/2 inches per second. The mechanical unit incorporates three controls.

1. The main control shifts the mechanism to the proper positions and connects the necessary circuits for "Rewind", "Stop", "Listen" and "Record".

2. Fast Forward used to step up forward speed when the main control is turned to "Listen". This enables the operator to skip portions of unwanted material or in locating passages near the end of the reel.

3. Motor Off-On control. This control turns the motor On or Off and engages the idler wheel with the flywheel and motor pulley when in the "On" position. The "Ekotape" can also be used as a P. A. System.

The "Ekotape" provides a large amplifier with two channels of amplification, one designed for recording, the other for listening.

A recording may be erased and the tape reused as many times as desired. Erasing is accomplished automatically, just prior to recording, with a dual-erase mechanism that leaves the tape in an absolutely neutral condition, or erasing may be accomplished separately if desired.

The "Ekotape" Models 101-102 and 103 are of the same basic design and construction and they are all portable. There are variations in the power input required and some have additional or extra features. These differences are listed below:

Model 101-8 - - Standard Unit-Power input 125 watts, 117 volts.

Model 101-9 - - Same as Standard Unit above except equipped with remote control Stop and Start.

Model 102-9 - - Announcer Unit-Power input 125 watts, 117 volts, 60 cycles, AC. 500 ohm input and output equipped with remote control Stop and Start.

Model 103-8 - - This model is the same as 101-8 except the power input is 135 watts, 115-230 volts, 50 cycles AC.

Manufacutred by:
Webster Electric Company
Racine, Wisconsin

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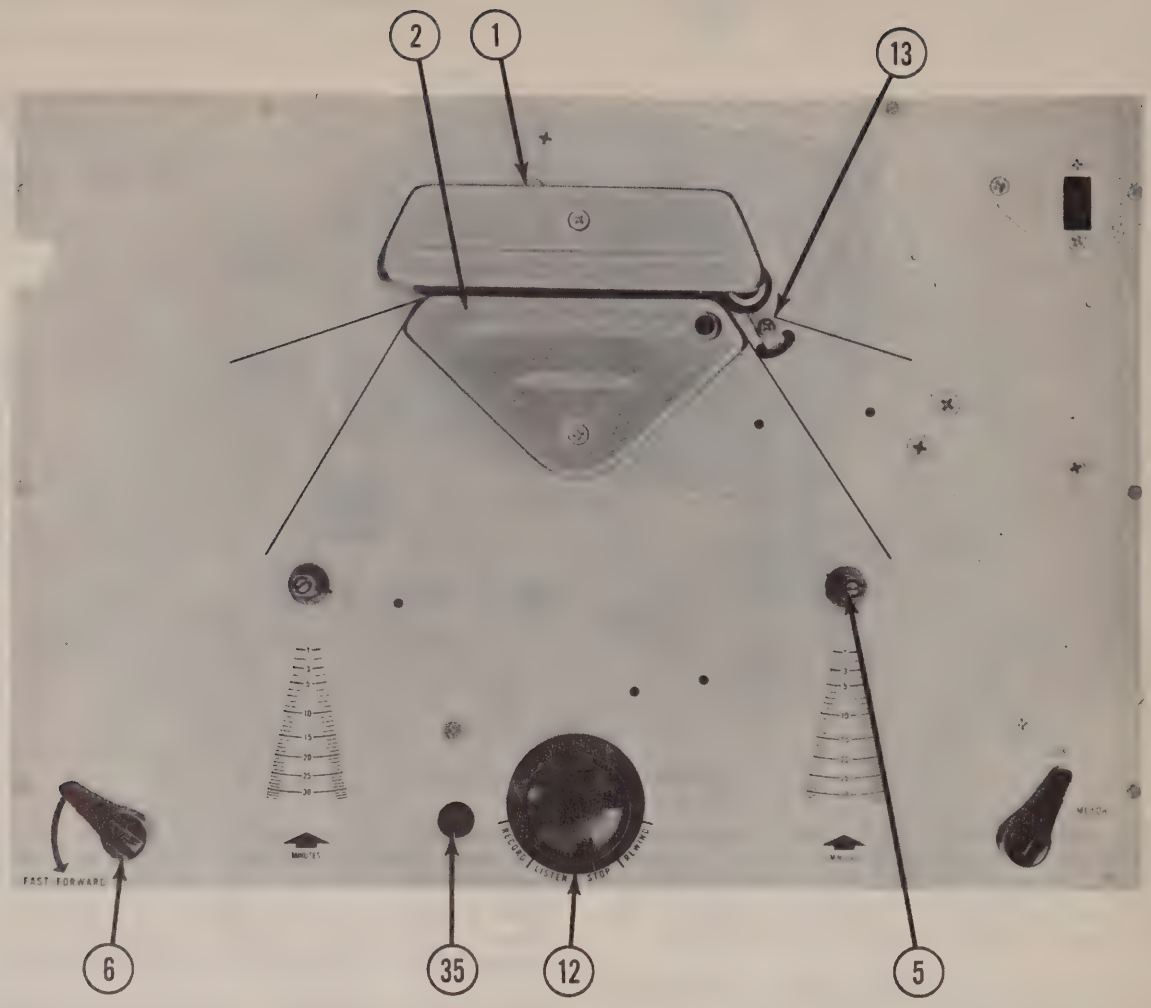

Figure 2 Top View - Mechanical Chassis

OPERATING INSTRUCTIONS

To Connect the Mechanical Unit to the Amplifier -

1. Place the left edge of the mechanical unit against the left edge of the carrying case at an angle of about 30 degrees.

2. Insert the two-prong motor plug into its receptacle (located on left side of carrying case).

3. Insert the six-prong plug into its receptacle, located on top of chassis.

4. Plug brown lead into angle shield, located next to the High Level-Low Level input.

5. Plug red lead into the jack location on the front right hand side of the chassis.

6. Remove all tags and wires.

7. Lower the mechanism into place, being careful not to damage the control switch.

8. Insert screws and washers in top plate and tighten.

To Prepare the "Ekotape" for Recording -

1. Insert the line cord into the receptacle in the side of the recorder, then into a convenient wall receptacle of the proper rating.

2. Turn the amplifier "On-Off" switch On.

3. Place a full reel of tape on the supply reel spindle (left-hand spindle) and an empty reel on the right spindle making sure the reels engage the metal guides on the spindles.

4. Pull about 14" of tape from the reel, drop the tape into the tape guide, then thread the tape onto the empty reel. Rotate the empty reel clockwise until the tape is secured to it and all slack is taken up between the reels.

Note: This "Ekotape" Recorder requires tape with (Type A) winding; i.e. the dull coated side faces in on the reel. In case the dull coated side faces outward on the reel (Type B) it can be changed to (Type A) for use on this recorder by winding the tape with a half twist. The two types are identical except the way in which they are wound on the reel.

5. Pull the motor "Off-On" knob to the "On" position.

6. Insert the microphone plug into the Low-Level-Input jack for Microphone recordings. High-

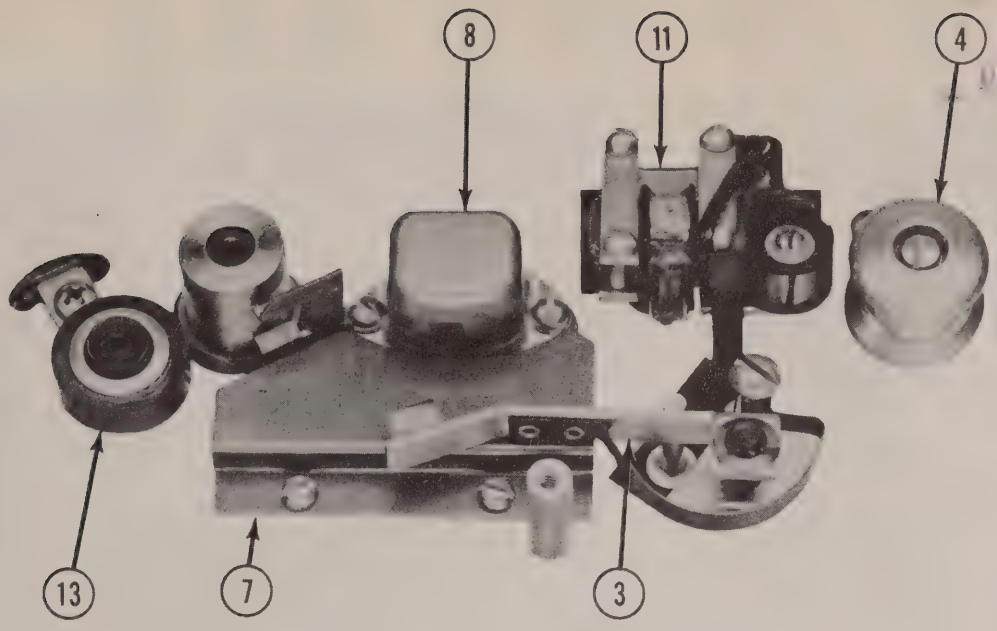

Figure 3 Record Head and Erase Assembly

Level-Input jack is used for connecting line from radio tuners and most phonographs.

7. With Listen Volume control turned to Min. and the Microphone switch pushed to On, advance the Recording Volume control until the incoming signal almost closes the recording indicator eye on high peaks only.

Note: Correct recording volume is very important. Too weak a signal, which does not cause the Eye to almost close will result in weak playback. Too strong a signal, causing the Eye to overlap will result in distortion during playback.

8. Depress the stop knob (35) and turn the control knob (12) to Record. All sounds now entering the microphone will be recording on the tape.

To Stop the Recorder -

1. To stop the recorder any time during operation, merely turn the main control knob (12) to the "Stop" position.

To Rewind -

1. To rewind the tape back on the supply reel, turn the control (12) to "Rewind".

To Play Back a Recording -

1. Turn the main control switch to "Listen".

2. Adjust the Listen Volume control and the Bass and Treble tone controls to suit. The Recording Volume control should be turned to "Min".

Note: Recording time indicator scales are provided for both supply and take-up reels; thus sections of a recorded program may be cued, and any desired section played back later. A fast forward speed and a fast rewind are provided so that any selected part of a recording may be reached in a few seconds.

To Use "Ekotape" as a P. A. -

1. Turn the amplifier switch on.

2. Insert the microphone plug into the Low-Level-Input.

3. Turn the Listen Volume control up gradually and keep the Microphone away from the recorder as too high a volume with Microphone too close to the recorder, will develope a loud shrill noise.

To Repair or Splice Tape -

In case the tape is broken accidentally, a splice may be made with Scotch tape. Do not use medical adhesive tape as the adhesive material is not suited for this purpose. The Scotch tape should be applied to the reverse, or uncoated, side of the recording tape. The edges of the splice should be trimmed with a small pair of scissors, or a knife, to bring the width of the splice to that of the rest of the recording tape.

TROUBLES

Motor and Amplifier Do Not Operate when Switches are Turned to the "On" Position -

1. Check fuse to see if it has blown. Fuse (M2) is locked in a fuse holder in the upper left hand corner of the front panel. Replace with a standard 2-amp. fuse.

2. Check to see if power is reaching recorder.

3. Power cord damaged. Replace.

Amplifier Operates but Motor Fails to Run -

1. Motor Off-On control knob loose. Tighten knob.

2. Motor not plugged into its receptacle.

3. Bad micro switch (M5).

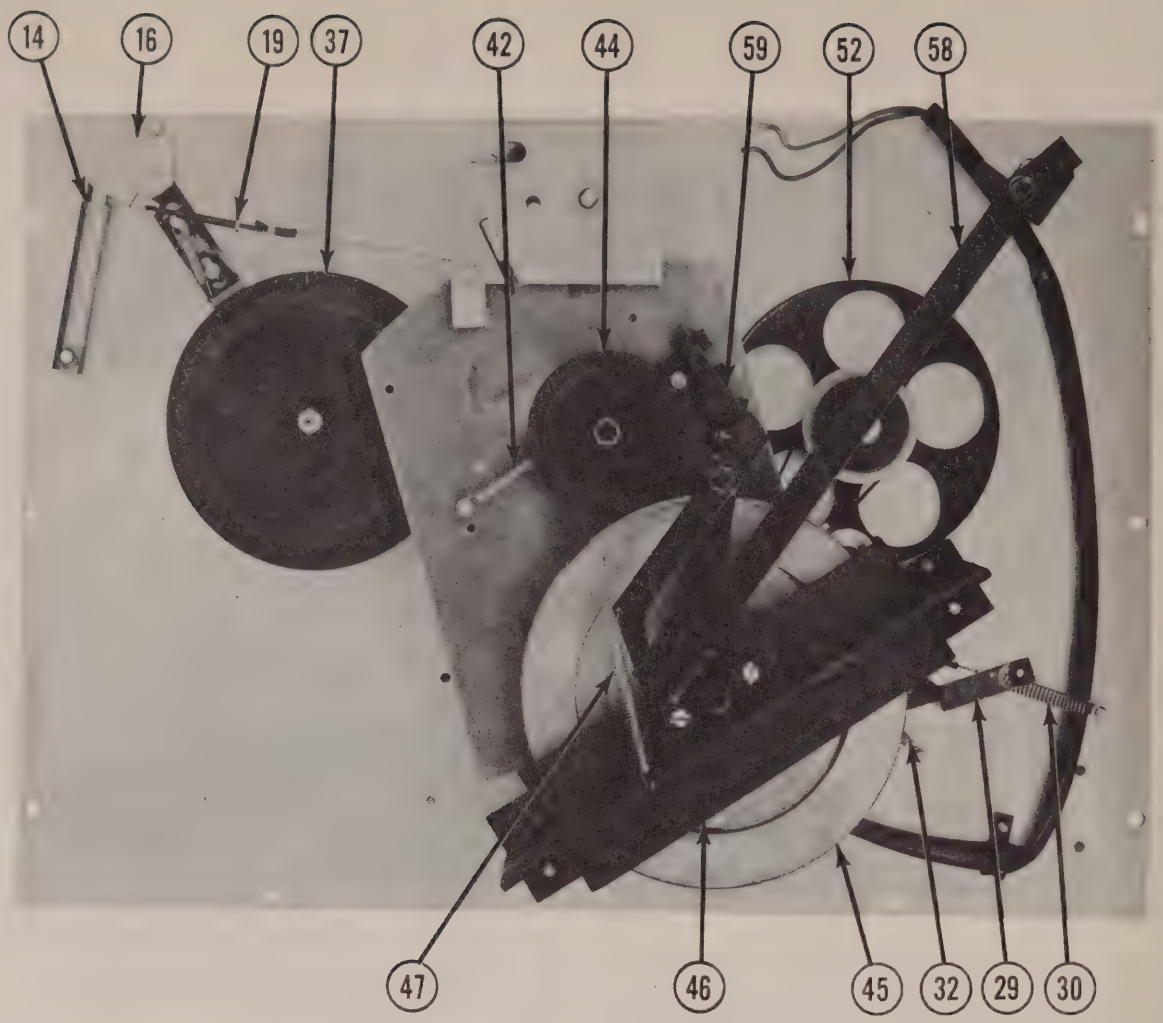

Figure 4 Bottom View- Less Motor and Switch Control

4. Micro switch (M5) not positioned properly. See Figure 5.

Sound is Fuzzy, Faint, Distorted or No Sound at all -

1. Check the recording head (8) to see if it is dirty. The recording head (8) is subject to an accumulation of tape coating residue, which is worn off as the tape passes. This must be periodically removed since it may cause a faint recording. This accumulation may be removed with carbon tetrachloride and a small cotton swab on the end of a toothpick.

2. Check pressure pad lever assembly (3) to see if the pad is intact and that it is holding recording tape against the recording head when in Listen and Record positions. If this is not true, check the spring of the lever assembly (3) to see if it is broken. Also, check recording head to see if it is secured to the base plate properly.

3. Over-recorded or under-recorded.

Note: Correct recording volume is very important. Too weak a signal, which does not cause the Indicator Eye to almost close on high peaks, will result in weak playback. Too strong a signal (Recording Volume tuned too high) causing the Eye to overlap will result in distortion during playback.

Intermittent Operation of the Main Control Switch in "Record" and "Listen" Positions -

1. Faulty selector switch (M4) see Figure 5. Replace switch and wire assembly (M4).

2. Broken wire. Replace wire.

3. Bad tubes. Check and replace tubes.

4. Switch gear (34) loose on switch (M4) shaft.

Recordings are Erased when Played Back -

1. Record head return spring (23) broken or disconnected.

Erasing Incomplete -

1. Permanent magnet not operating. Check by holding tape against permanent magnet and away from A C head while on Record. Play back on Listen and if old recorded sound remain on tape, replace permanent magnet.

Fast Forward or Rewind Inoperative -

1. Defective clutch (40) on motor. See Motor Assembly.

Metallic Noise on Rewind -

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L. F. MANNSCHRECK
3900 MIRANDA ST
DENVER, COLORADO

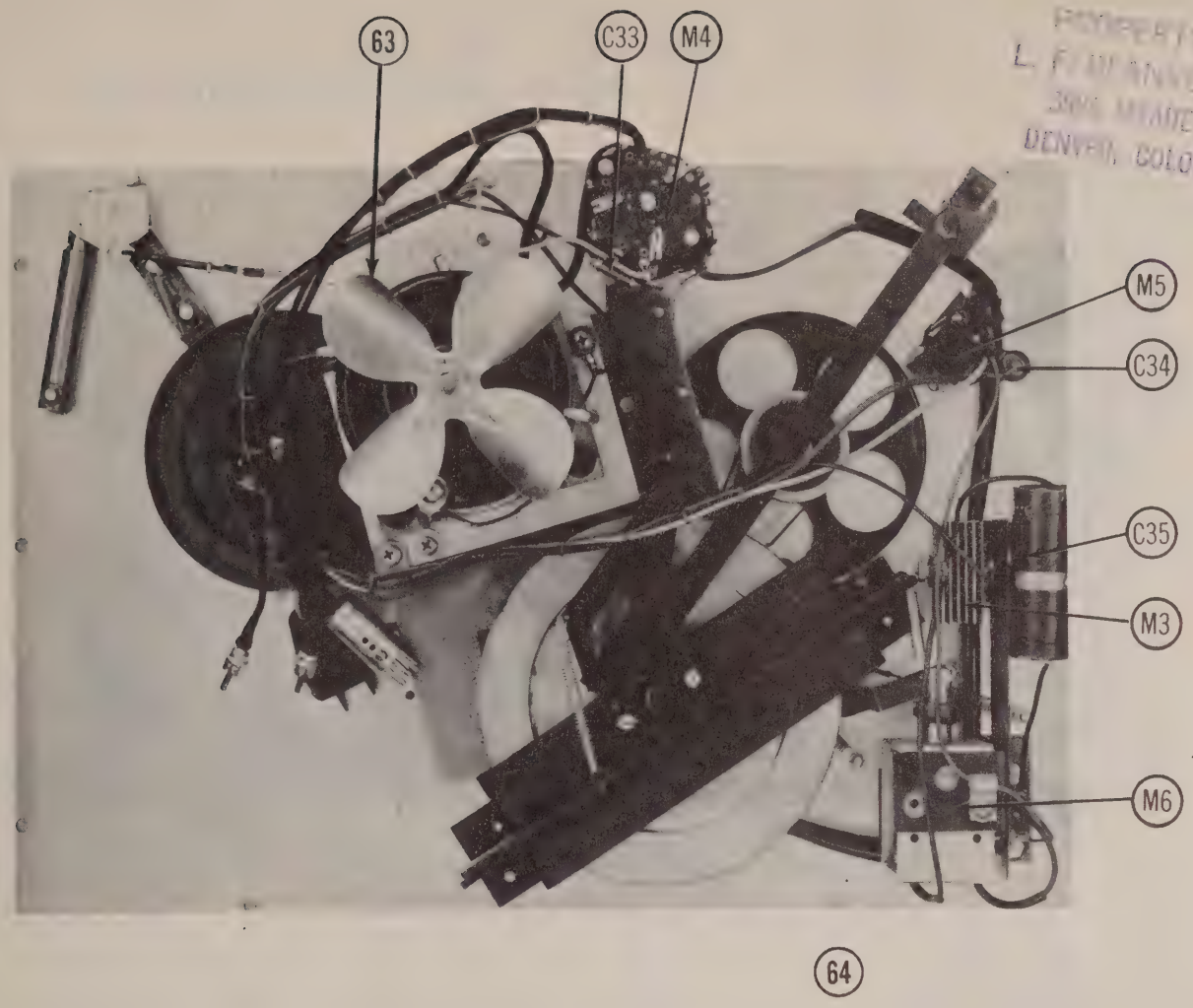

Figure 5 Bottom View - Complete Assembly

1. Motor drive clutch assembly (40) out of alignment. See "Motor Assembly" under "Replacement and Adjustment of Parts".

Noise or Rumbles -

1. Flat or worn tire on motor drive and clutch assembly (40). Replace motor drive and clutch assembly (40). See "Motor Assembly" under Replacement and Adjustment of Parts".

No Drive or Irregular Action on Fast Forward -

1. The idler and guide plate assembly (27) may be sticking. Clean and lubricate.

2. Idler spring (24) loose or broken thereby not pulling idler into engagement with motor clutch (40), and the take-up reel pulley (52). Replace spring (23).

3. Grease or oil the idler tire (27A). Clean with naptha.

Uneven Sound, "Wow" caused by Tape Slipping -

1. Pinch roller spring (32) loose or broken thereby preventing the engagement of the pinch roller (13) with the tape and capstan. Replace spring (32).

2. Bent pinch roller lever (13). Straighten.

3. Pinch roller lever (13) loose on its mounting. Tighten.

4. Worn or damaged pinch roller. Replace pinch roller assembly (13).

Supply Reel Overruns from
Fast Forward to Play -

1. Dirt in dashpot (14). Clean and lubricate.

2. Worn cork brake pad on stop arm (17A). See Figure 4. Replace brake pad.

Take-Up Reel Does Not Take Up -

1. Drive belt (62) slipping or broken. Replace with new belt.

2. Take-up reel clutch slipping. Tighten tension adjustment nut (56) just enough so the tape winds properly.

3. Take-up reel brake lever not being actuated by the pin on the index plate (41). Check the position of the pin on the index plate (41) nearest the switch control (M4) to see if it is perpendicular to the index plate, if not straighten.

Howl-Listen Volume Control at 0 Only -

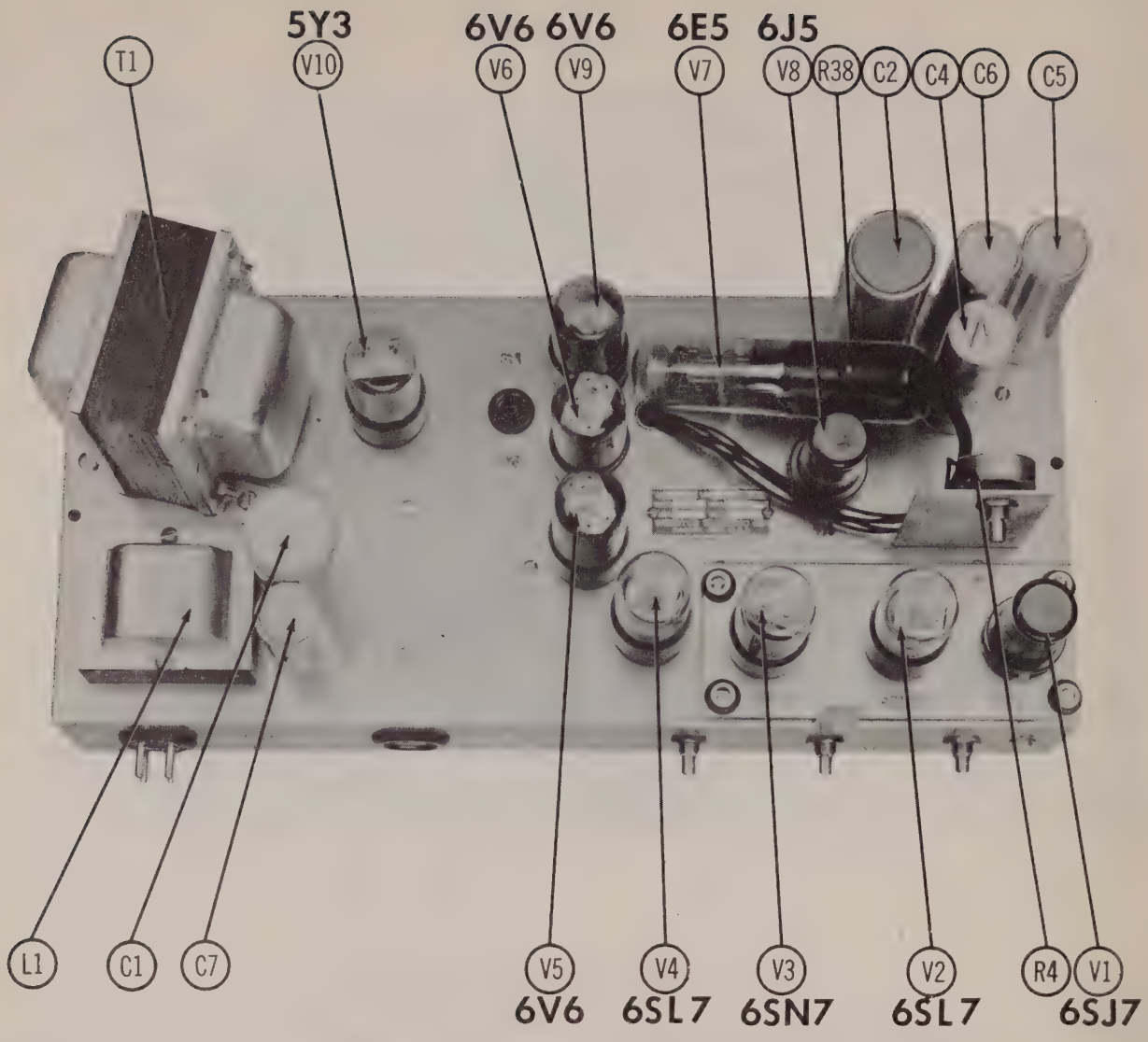

Figure 6 Top View

1. 6SN7 or 6SL7 tube in microphonic. Replace.

Replacement and Adjustment of Parts

REPLACEMENT AND ADJUSTMENT OF PARTS

Motor and Drive Clutch Assembly -

In case the motor (61) or drive clutch assembly (40) is defective, replace as follows:

1. Remove the 8 Phillips head screws from the base plate (10), then lift the mechanism from the case and disconnect the 3 plugs from the amplifier and 1 plug from power supply from motor.

2. Unhook the idler spring (42), Figure 4 and push the idler assembly back as far as possible.

3. Remove the three screws (61A) and spacers (61B) attaching the motor mount (61C) to the index plate (41) and remove complete motor assembly. See Exploded View.

4. If the motor drive clutch assembly (40) is removed be sure to reinstall the spacers inside the hub. When installing a new drive and clutch assembly, insert as many spacers as needed, to position the clutch drive assembly (40) approximately 3/64'' above the motor mounting plate with motor hanging in a vertical position. Tighten the screws.

5. When reinstalling the motor assembly, be sure the idler spring (42) is disconnected and idler assembly pushed back so it will not interfere with the motor drive.

6. Before tightening the mounting screws (61A), turn the motor assembly counterclockwise from the bottom against the screws, then tighten the screws.

7. Hook the idler spring (42) over the post to pull the idler (44) in position against the motor drive.

8. Before reinstalling the mechanism in the case, be sure the plugs are properly connected as described under "To Connect the Mechanical Unit to the Amplifier".

Adjustment of the Micro Switch (M5), Figure 5 -

1. The motor micro switch (M5) should be positioned so that the motor starts just after the idler

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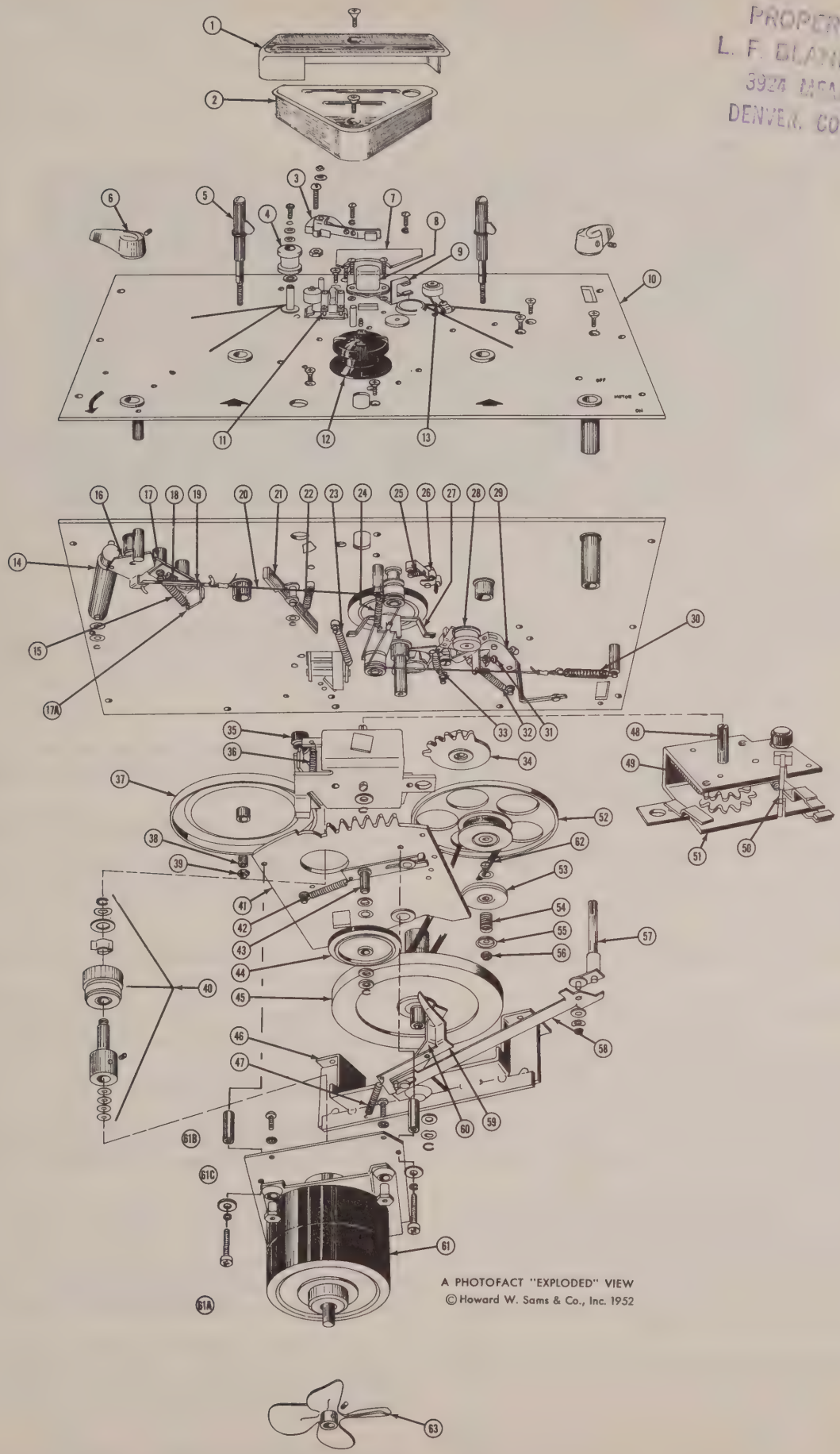

A PHOTOFACT "EXPLODED" VIEW

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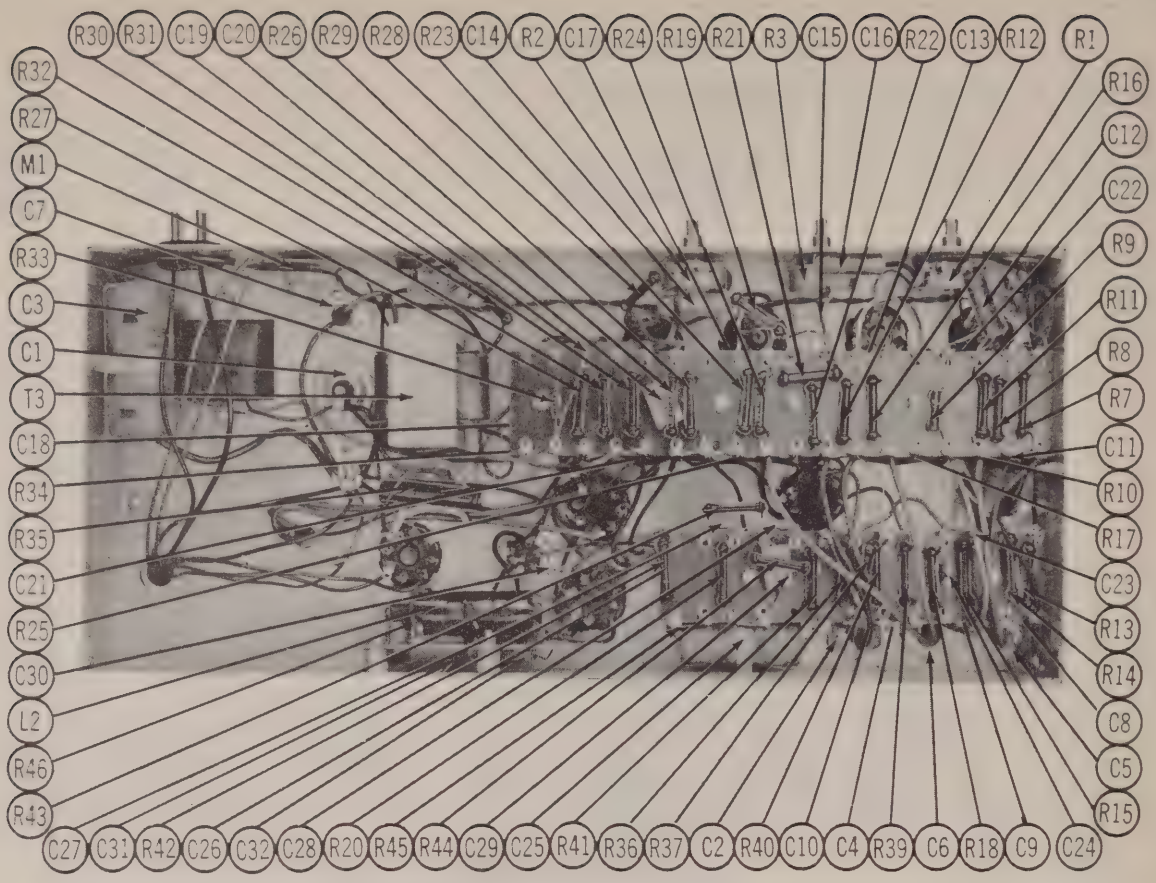


Figure 7 Bottom View

drive wheel (44) engages the flywheel (45) and the motor drive assembly (40). This adjustment is made by moving the motor switch (M5) toward or away from the link (58).

Replacement of Take-Up Pulley Belt, See Figure 5 -

Replacement of Take-Up Pulley Belt - See Figure 5 -

1. Remove the mechanical mechaism from the case.

2. Remove the back cover (1).

3. Turn the mechanism over and unhook the idler spring (42) then push idler assembly back.

4. Remove levers (58) and (59) and bracket (60).

5. On models having the remote control, remove the spring (63).

6. Remove the bracket (46) and move the flywheel until the belt can be slipped off the take-up reel assembly (52).

7. Remove the flywheel and then remove the belt by working it around the parts.

Note: Do not force the belt in or out of position when removing or installing.

8. To reinstall belt, work the belt around the parts under the index plate (41) and place the belt around the flywheel pulley, then replace the flywheel (45). Hold the flywheel over towards the take-up pulley as far as possible and work the belt down over the take-up pulley groove.

9. Replace the bracket (46) and install the bracket screws from the top of the base plate. Tap the flywheel to align the bearings.

10. Replace the bracket (60), levers (58) and (59).

11. Hook idler spring (42) and spring (64) on the remote control models.

12. Replace the mechanism on the case and make the proper connections to the amplifier.

Switch Assembly (M4) Replacement -

It is recommended that the complete switch and harness assembly (M4) be replaced rather than attempting to repair the switch. Replacement is as follows:

1. Remove the mechanism from the case and disconnect the plugs.

2. Remove the control knob (12) and the record stop button. Control knob has an Allen set screw and the bottom is screwed on (right hand thread).

3. Remove the three Phillips flat head screws holding the bracket (51) in place. Remove the switch and bracket by pulling straight out and lifting up so the control shaft clears the base plate (10).

Remove the Switch Assembly (M4) from Bracket (51) as follows:

1. Unhook the detent spring (49) and remove from assembly.

2. Loosen the set screw in the switch gear (34) and remove the gear from the switch shaft.

3. Remove the attaching nut and the switch assembly (M4) from the bracket (51).

Install Switch Assembly as follows:

1. Install the switch (M4) on the bracket (51) making sure the index pin on the switch engages the slot in the bracket. Hold the switch shaft to the outer edge of the mounting hole in the bracket and lock the nut in position.

2. Replace the switch gear on the shaft but do not tighten.

3. Install the detent spring (49).

4. Rotate the bracket control shaft (48) clockwise to the last indent position. Rotate the selector switch (M4) shaft counterclockwise as far as it will go. Position the switch gear (34) on the shaft so that the set screw is aligned with the slot in the shaft and away from the bracket. Center and tighten the screw.

Install Switch and Bracket Assembly on Base Plate as Follows:

1. Rotate the bracket control shaft (48) one position counterclockwise from last clockwise indent position. Position the bracket on the base plate with index plate (41) notch against the record stop (50) of the bracket assembly.

2. Twist the bracket clockwise until the teeth mesh and install attaching screws from top side of panel.

Fast Forward Cable Adjustment -

Make the fast forward adjustment when the mechanism is completely assembled and with the power off.

1. Turn the control knob (12) to the Listen position.

2. Pull the fast forward knob to the Fast Forward position.

3. Check the distance between the sleeve on the cable (20) and the fast forward idler and guide plate assembly (27). Make sure the fast forward idler tire is engaged with the motor drive (40) and the take-up reel disc (52). The distance between the idler guide plate and sleeve should be approximately 1/16" to 3/32".

4. Adjustment is made at the fast forward control plate (16) by turning the adjustment screw on the turnbuckle assembly (19). Turn the adjustment screw on cable clockwise to increase the distance and counter-clockwise to decrease it.

Remote Stop-Start Adjustment -

There are three adjustments on the remote control, describes as follows:

1. The Pinch Roller Kick-Out Adjustment. With the control knob (12) in Listen or Record position, check the distance between the adjusting screw (31), (which is mounted on lever 29) and the pinch roller lever (13). It should be less than 1/32 of an inch but the screw should not be touching the lever.

2. Throw Adjustment. If when the pinch roller kick-out is properly adjusted, the pinch roller still does not disengage the capstan, move the solenoid (M6) back on the bracket to increase the throw of the arm just enough so roller clears capstan.

3. Solenoid armature adjustment. When solenoid is energized the armature should bottom on the frame. If it does not bottom, loosen the two set screws on the armature collar and move the collar just enough so that the rubber bumper cushions the armature as it reaches the bottom. Retighten the set screws.

LUBRICATION

Adequate lubrication has been applied at the time of manufacture and should be sufficient for a long period of time. However, in cases of extreme usage, or when parts are disassembled for repairs, the unit should be thoroughly cleaned with carbon tetrachloride and lubricated as follows:

Use a good high-temperature lubricant on all gears, pivots, bearings, sliding guides and between the stop arm (19), and follower arm (19A).

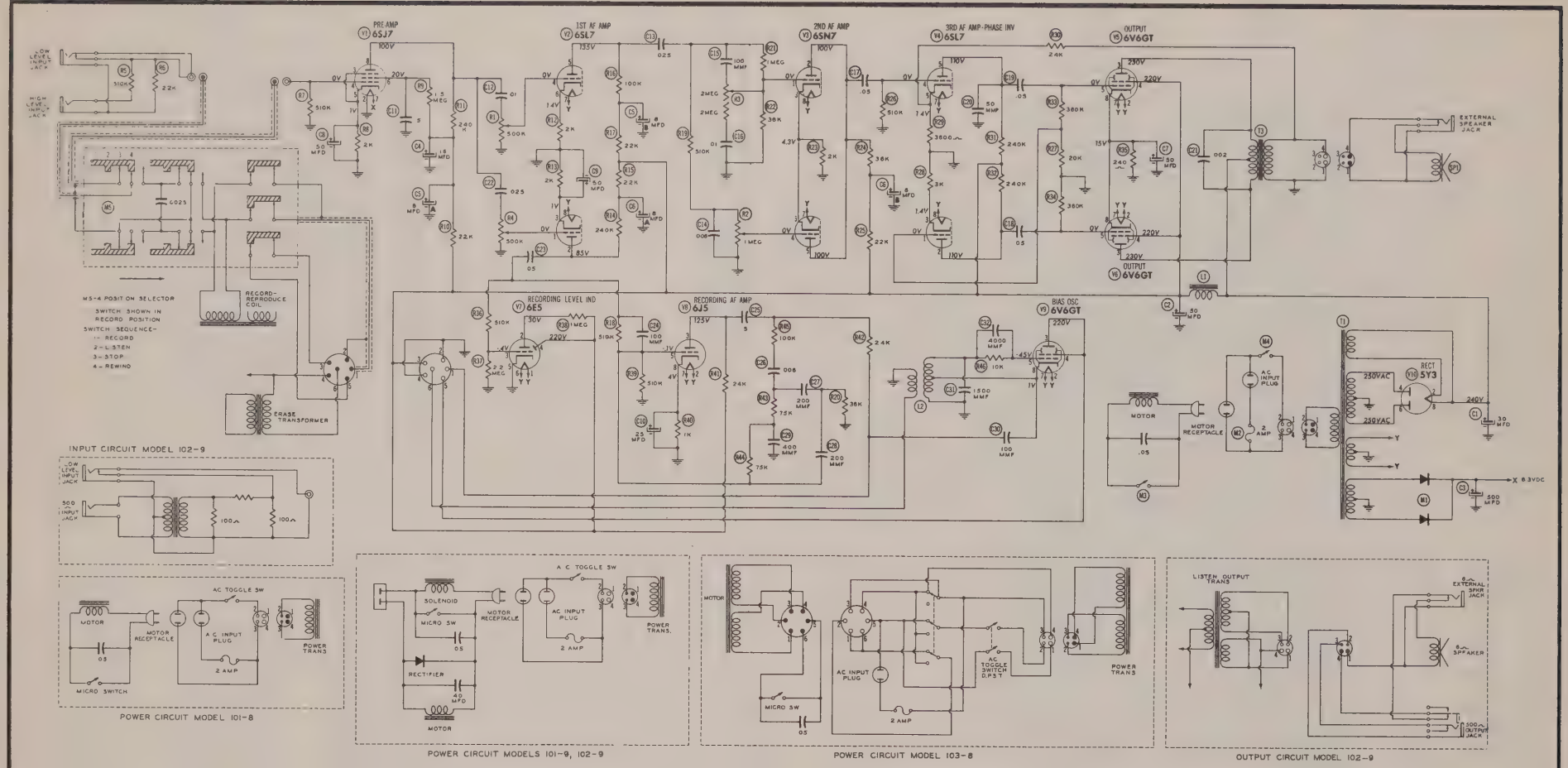
Clean the dashpot assembly (14) and lubricate with Silican Jell No. 200(242-12846), or equivalent. Coat piston and work into cylinder.

Use a light machine oil on all oilite bearings for the following:

1. Flywheel (45).
2. Guide wheel assembly idler pulley (27).
3. Fast forward idler assembly (28).
4. Idler pulley drive (44).

Use standard Wadhams BRB high temperature lubricate on the motor drive clutch assembly (40).

Caution: Avoid overlubrication, as this may cause the parts to gum up, thus preventing the unit from functioning properly. Do not lubricate the motor. Do not allow grease to come in contact with any of the rubber tires or any of their contacting surfaces. If grease should come in contact with these surfaces, clean them with carbon tetrachloride.



THE COOPERATION OF THE MANUFACTURER OF THIS EQUIPMENT MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	6SJ7	0Ω	0Ω	2KΩ	510KΩ	2KΩ	†1.5Meg	3.2Ω	†260KΩ
V 2	6SL7GT	25Ω	†260KΩ	2KΩ	25Ω	†120KΩ	2KΩ	.1Ω	.1Ω
V 3	6SN7GT	36KΩ	†58KΩ	2KΩ	20Ω	†58KΩ	2KΩ	.1Ω	.1Ω
V 4	6SL7GT	20KΩ	†240KΩ	3KΩ	510KΩ	†240KΩ	316KΩ	.1Ω	.1Ω
V 5	6V6GT	INF	.1Ω	†220Ω	†450Ω	380KΩ	INF	.1Ω	240Ω
V 6	6V6GT	INF	.1Ω	†220Ω	†450Ω	380KΩ	INF	.1Ω	240Ω
V 7	6E5	.1Ω	†1Meg	900KΩ	†450Ω	0Ω	.1Ω		
V 8	6J5	0Ω	.1Ω	†24KΩ	INF	450KΩ	INF	.1Ω	1KΩ
V 9	6V6GT	INF	.1Ω	†450Ω	†450Ω	10KΩ	INF	.1Ω	3Ω
V 10	5Y3GT	INF	45KΩ	INF	55Ω	INF	59Ω	INF	45KΩ

ALL MEASUREMENTS TAKEN IN RECORD POSITION
† MEASURED FROM PIN 8 OF V10
▲ TAKEN WITH VACUUM TUBE VOLTMETER

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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170-6

MECHANICAL PARTS LIST

Ref. No.	Part No.	Description	Ref No.	Part No.	Description
1	241-12260	Back Cover	32	241-12139	Pinch Roller Spring
2	241-12261	Front Cover	33	241-12771	Idler Pulley Spring
3	242-12114	Pressure Pad Lever Assembly	34	242-12084	Switch Gear & Hub Assembly
4	242-12221	Guide Wheel Assembly	35	241-12111	Stop Knob
5	242-12124	Reel Shaft Assembly	36	241-12037	Switch Stop Spring
6	S6560-3	Control Knob	37	242-12299	Supply Reel Pulley Assembly
7	241-12398	Shelf	38	241-12036	Spacer
8	242-12160	Record Head and Can Assembly	39	241-12035	Lock Nut
9	241-13712	Tape Guide	40	242-12443	Motor Clutch Assembly (Models 101, 102)
10	242-12007	Base Plate Assembly (-8 Models Only)		242-12443-1	Motor Clutch Assembly (Model 103)
	242-12007-1	Base Plate Assembly (19 Models Only)	41	242-12156	Index Plate Assembly
11	242-12265	Erase Head Arm Assembly (Complete)	42	241-12140	Idler Spring
	241-12101	Permanent Magnet	43	242-13346	Idler & Plate Assembly
	242-12017	Erase Transformer	44	242-12267	Drive Idler Assembly
12	241-12214	Switch Knob	45	242-13719	Flywheel Assembly
13	242-12271	Pinch Roller & Lever Assembly	46	242-12707-2	Flywheel Support Bracket Assembly
14	242-12320	Cylinder & Plunger Assembly		242-12707-4	Flywheel Support Bracket Assembly (-5 Models Only)
15	241-12128	Spring	47	241-12042	Spring
16	242-12243	Control Plate & Shaft Assembly	48	241-12108	Switch Drive Shaft
17	241-12233	Follower Arm	49	241-12052	Detent (Pawl) Spring
17A	242-12246	Stop Arm Assembly	50	241-12051-1	Switch Lock Plate
18	241-12231	Reel Stop Spring	51	242-12259	Switch Bracket Assembly (Less Switch)
19	242-12926	Turnbuckle Assembly			
20	242-12297	Fast Forward Cable Assembly	52	242-12062	Take-Up Reel Pulley Assembly
21	242-12072	Supply Reel Brake Lever Assembly	53	242-12154	Drive Disc Assembly
			54	241-12098	Clutch Spring
22	241-12141	Supply Reel Spring	55	241-12097	Spring Cup
23	241-12140	Record Head Return Spring	56	241-12035	Lock Nut
24	241-12128	Idler Spring	57	242-13339	Shaft Assembly
25	241-12138	Take-Up Reel Brake Spring	58	242-13336	Link Assembly
26	242-12277	Take-Up Reel Brake Lever Assembly	59	241-13359	Lever
			60	242-13355	Bracket Assembly
27	242-12288	Idler & Guide Plate Assembly	61	241-12268-1	Motor (Model 101, 102)
28	242-12075	Idler Pulley Lever Assembly		241-12702	Motor (Model 103)
29	242-13843	Lever Assembly	62	241-12056-3	Drive Belt
30	241-12248	Cable Spring	63	241-12467	Motor Fan
31		Pinch Roller Adjustment Screw	64	241-12771	Spring

ELECTRICAL PARTS LIST

Ref. No.	Description	Ref. No.	Description
V1	6SJ7, Pre-Amplifier	C10	Record AF Amp. Cathode, 25 mfd. @ 25 Volts
V2	6SL7, 1st AF Amplifier	C11	Pre Amp. Screen Bypass, .5 mfd. @ 400 Volts
V3	6SN7GT, 2nd AF Amplifier	C12	Audio Coupling, .01 mfd. @ 400 Volts
V4	6SL7, 3rd AF Amplifier - Phase Inverter	C13	Audio Coupling, .025 mfd. @ 400 Volts
V5	6V6GT, Audio Output	C14	Tone Compensation, .006 mfd. @ 600 Volts
V6	6V6GT, Audio Output	C15	Tone Compensation, 100 mmf.
V7	6E5, Record Level Indicator	C16	Tone Compensation, .01 mfd. @ 400 Volts
V8	6J5, Record AF Amplifier	C17	Audio Coupling, .05 mfd. @ 400 Volts
V9	6V6GT, Bias Oscillator	C18	Audio Coupling, .05 mfd. @ 400 Volts
V10	5Y3, Rectifier	C19	Audio Coupling, .05 mfd. @ 400 Volts
C1*	Filter, 30 mfd. @ 500 Volts	C20	3rd AF Amp. Plate Bypass, 50 mmf. @ 500 Volts
C2	Filter, 50 mfd. @ 450 Volts	C21	Audio Output Plate, .002 mfd. @ 600 Volts
C3	Filament Filter, 500 mfd. @ 25 Volts	C22	Audio Coupling, .025 mfd. @ 400 Volts
C4	Pre-Amp. Dec. 16 mfd. @ 450 Volts	C23	Audio Coupling, .05 mfd. @ 400 Volts
C5A	Pre-Amp. Dec. 8 mfd. @ 450 Volts	C24	Audio Coupling, 100 mmf.
C5B	1st AF Amp. Plate Dec. 8 mfd. @ 450 Volts	C25	Audio Coupling, .5 mfd. @ 400 Volts
C6A	1st AF Amp. Plate Dec. 8 mfd. @ 450 Volts	C26	Tone Compensation, .006 mfd. @ 400 Volts
C6B	2nd AF Amp. Plate Dec. 8 mfd. @ 450 Volts	C27	Tone Compensation, 200 mmf.
C7	Audio Output Cathode, 50 mfd. @ 100 Volts	C28	Tone Compensation, 200 mmf.
C8	Pre-Amp. Cathode, 50 mfd. @ 6 Volts	C29	Tone Compensation, 400 mmf. @ 500 Volts
C9	1st AF Amp. Cathode, 50 mfd. @ 6 Volts	C30	Bias Osc. Coupling, 100 mmf.

Ref. No.	Description
C31	Fixed Trimmer, 15,000 mmf. @ 500 Volts
C32	Bias Osc. Grid Cap. 4000 mmf. @ 500 Volts
C33	Audio Coupling 2500 mmf. @ 500 Volts
C34	Switch Bypass .005 mfd. @ 400 Volts
C35	Power Circuit Electrolytic, 40 mfd. @ 250 Volts (9 Series Only)
* Some Models use 40mfd. in this Application	
R1	Listen Volume Control, 500K ohm, 1/2 Watt
R2	Bass Control, 1 Meg., 1/2 Watt
R3	Treble Control, Inf. 1/2 Watt (See Note)
R4	Record Volume Control, 500K ohm, 1/2 Watt
R5	Input Shunt, 510K ohm, 1/2 Watt
R6	Input Shunt, 22K ohm, 1/2 Watt
R7	Pre-Amp Grid, 510K ohm, 1/2 Watt
R8	Pre-Amp. Cathode 2K ohm, 1/2 Watt
R9	Pre-Amp. Screen 1.5 Meg, 1/2 Watt
R10	Pre-Amp. Screen Decoupling, 22K ohm, 1/2 Watt
R11	Pre-Amp. Plate, 240K ohm, 1/2 Watt
R12	1st AF Amp. Cathode, 2K ohm, 1 Watt
R13	1st AF Amp. Cathode, 2K ohm, 1/2 Watt
R14	1st AF Amp. Plate, 240K ohm, 1/2 Watt
R15	1st AF Amp. Plate Decoupling, 22K ohm, 1/2 Watt
R16	1st AF Amp. Plate, 100K ohm, 1/2 Watt
R17	1st AF Amp. Plate Decoupling, 22K ohm, 1/2 Watt
R18	Tone Compensation, 510K ohm, 1/2 Watt
R19	Tone Compensation, 510K ohm, 1/2 Watt
R20	Tone Compensation, 36K ohm, 1/2 Watt
R21	Tone Compensation, 1 Meg., 1/2 Watt
R22	2nd AF Amp. Grid, 36K ohm, 1/2 Watt
R23	2nd AF Amp. Cathode, 2K ohm, 1/2 Watt
R24	2nd AF Amp. Plate, 36K ohm, 1/2 Watt
R25	2nd AF Amp. Plate Decoupling, 22K ohm, 1/2 Watt
R26	Phase Inverter Grid, 510 K ohm, 1/2 Watt
R27	Phase Inverter Grid, 20K ohm, 1/2 Watt
R28	Phase Inverter Cathode, 3K ohm, 1/2 Watt
R29	Phase Inverter Cathode, 3600 ohm, 1/2 Watt
R30	Feedback, 24K ohm, 1/2 Watt
R31	Phase Inverter Plate, 240K ohm, 1/2 Watt

Ref. No.	Description
R32	Phase Inverter Plate, 240K ohm, 1/2 Watt
R33	Output Grid, 360K ohm, 1/2 Watt
R34	Output Grid, 360K ohm, 1/2 Watt
R35	Output Cathode, 240 ohm, 2 Watts
R36	Volume Indicator Filter, 510K ohm, 1/2 Watt
R37	Volume Indicator Grid, 2.2 Meg. 1/2 Watt
R38	Volume Indicator Plate, 1 Meg., 1/2 Watt
R39	Recording AF Amp. Grid, 510K ohm, 1/2 Watt
R40	Recording AF Amp. Cathode, 1000 ohm, 1 Watt
R41	Recording AF Amp. Plate 24K ohm, 1/2 Watt
R42	Tone Compensation 24K ohm, 1/2 Watt
R43	Tone Compensation 100K ohm, 1/2 Watt
R44	Tone Compensation, 75K ohm, 1/2 Watt
R45	Tone Compensation, 75K ohm, 1/2 Watt
R46	Bias Oscillator Grid 10K ohm, 1 Watt
	Note: Open Element Type of Control - One Side 2 Meg., Other Side 250 K ohm.
T1	Power Transformer Part # 242-12207
T2	Input Transformer Part # 211-30679 (Used in Model 102-9 only)
T3	Output Transformer Part # 242-12196 (Used in Model 102-9 Only)
L1	Filter Choke Part # 811A-1
L2	Bias Oscillator Coil Part # 242-15418
SP1	PM Speaker 3.6 ohm
M1	Selenium Rectifier Part # 241-13099
M2	Fuse 3AG, 2A250V
M3	Selenium Rectifier Part # 241-13581 (-9 Series Only)
M4	Selector Switch, Part # 242-12618-2 (-9 Series Only)
M5	Micro Switch, Part # 241-13345
M6	Solenoid, Part # 241-13841 (-9 Series Only)

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DENVER, COLORADO

FIRESTONE
MODELS 4-C-19, 4-C-20

VOLUME CONTROL ON-OFF SW.

TUNING CONTROL

FIRESTONE
MODELS 4-C-19, 4-C-20

FIRESTONE MODEL 4-C-19

TRADE NAME	Firestone Models 4-C-19, 4-C-20
SUPPLIER	Firestone Tire & Rubber Co., 1200 Firestone Pkwy, Akron, Ohio
TYPE SET	Three Power Portable AM Superheterodyne Receiver
TUBES (Four)	Types 1R5 Conv., 1U4 IF Amp., 1U5 Det.-AVC-AF Amp., 3V4 Audio Output
POWER SUPPLY	110-120 Volts AC/DC or 4.5 Volts "A" Supply and 90 Volts "B" Supply
RATING	.125 Amp. @ 117 Volts AC or 100 MA @ 4.5 Volts DC and 11 MA @ 90 Volts DC
TUNING RANGE—BROADCAST	540 - 1600 KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1MFD capacitor in series with low side of signal generator and B-. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.05MFD	High side to pin 6 (grid) of 1R5 (V1) Low side to B-	455KC (400~ Mod.)	Point of non-interference	Across voice coil	A1, A2 A3	Adjust for maximum output. If AC power is used without an isolation transformer, reduce dummy antenna to 200MMF to reduce hum modulation
2.	Direct	Loop	1620 KC	Tuning gang fully open	"	A4	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.	"	"	1400 KC	Tune to 1400 KC	"	A5	Adjust for maximum output.
4.	"	"	600 KC	600KC	"	A6	Adjust for maximum output. Repeat steps 2 and 3.

With receiver aligned and in cabinet rotate the tuning shaft fully clockwise and replace dial with the "1" in 160 even with the pointer mark on cabinet.

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed."
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PARTS LIST AND DESCRIPTIONS

FIRESTONE MODEL 4-C-19

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: FIRESTONE PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Converter	1R5	1R5	7AT	
V2	IF Amplifier	1U4	1U4	6AR	
V3	Det.-AVC-AF Amp	1U5	1U5	6BW	
V4	Audio Output	3V4	3V4	6BX	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: FIRESTONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	50	150	N-6841	AFH4-32		UP53315C-10		TVL-3427	▲ Filter
B	30	150						TVA-1412	■ Filter
C	30	150							▲ Decoupling
D	100	25							Fil. Filter
C2	50		N-6375	SI50	D6-500	TM5Q5	GP1K-500	5GA-Q5	Osc. Grid Cap.
C3	.005	600	N-4894	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Osc. Anode Bypass
C4	.1	400	N-1351	P488-1	DF-104	PTE4P1		4TM- P1	Fil. Bypass
C5	.05	200	N-1345	P288-05	DF-503	PJ2S5		2TM-S5	AVC Filter
C6	.002	600	N-6377	P688-002	D6-202	PTE6D2	GP2-333-202	6TM-D2	IF Amp. Grid Filter
C7	100		N-6015	SI100	D6-101	TM5T1	GP1K-101	5GA-T1	Diode RF Filter
C8	.005	600	N-4894	P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Audio Coupling
C9A	.005		♦N-8330	P688-005	♦PC-91	PTE6D5	GP2-333-502	6TM-D5	AF Amp. Screen Bypass
B	100			SI100		TM5T1	GP1K-101	5GA-T1	AF Amp. Plate Bypass
C	.005			P688-005		PTE6D5	GP2-333-502	6TM-D5	Audio Coupling
C10	.002	600	N-6377	P688-002	D6-202	PTE6D2	GP2-333-202	6TM-D2	Audio Output Plate
C11	.05	600	N-1346	P688-05	DF-503	PTE6S5		6TM-S5	Line Filter
C12	.05	200	N-1345	P288-05	DF-503	PJ2S5		2TM-S5	Line Isolation

♦ Items C9A, C9B, C9C, R8A, R8B, R8C are combined in one unit.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: FIRESTONE PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	1Meg	½	N-8332	Q13-137	AM-63-Z	BSK-70-S	Volume Control
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Attach to R1A per instructions
C	Switch		Not Req.	76-2	SW-A2	Not Req.	Attach to R1A per instructions

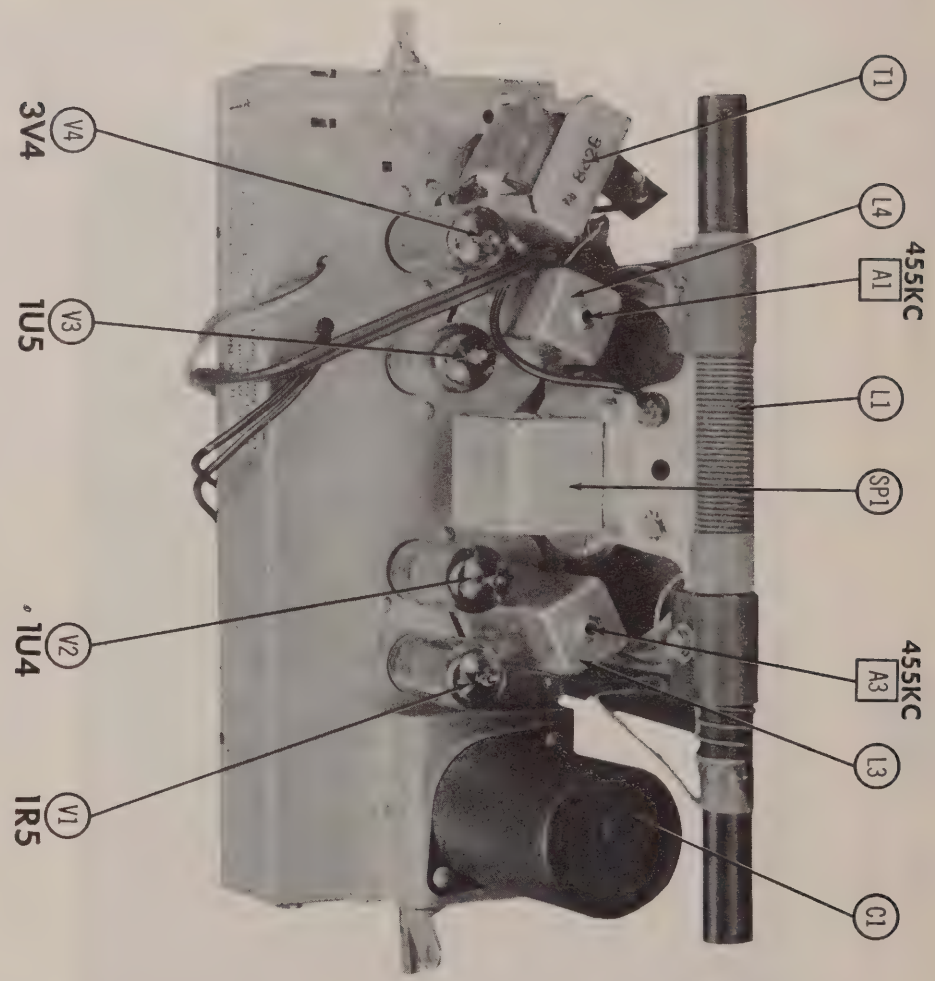
RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: FIRESTONE PART No.	IRC PART No.	IDENTIFICATION CODES
R2	22KΩ	½	N-6012		Osc. Anode
R3	100KΩ	½	N-2973	BTS-100K	Osc. Grid
R4	6.8Meg	½	N-4028		IF Amp. Grid
R5	4.7Meg	½	N-4061	BTS-4.7Meg	AVC Network
R6	470Ω	½	N-4066	BTS-470	Filament String
R7	6.8Meg	½	N-4028	BTS-6.8Meg	AF Amp. Grid
R8A	4.7Meg	½	♦N-8330	BTS-4.7Meg	AF Amp. Screen
B	1Meg	½		BTS-1Meg	AF Amp. Plate
C	2.2Meg	½		BTS-2.2Meg	Output Grid
R9	1200Ω	½	N-6793	BTS-1200	Filament String
R10	82Ω	2	N-4023		Surge Limiter
R11A	1150Ω	5.6	N-8333		Filter - Wire wound
B	1150Ω				Filament Dropping - Wire wound
R12	2200Ω	½	N-4896	BTS-2200	Filter
R13	220KΩ	½	N-4026	BTS-220K	Bias Network
R14	1200Ω	½	N-6793	BTS-1200	Filament String
R15	33Ω	½			Filament String - See Note 1
R16	330Ω	½	N-4420	BTS-330	Bias Network

Note 1. Some models use a 27Ω resistor in this application (Part #N-6792)

♦ Items R8A, R8B, R8C, C9A, C9B, C9C are combined in one unit.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		FIRESTONE PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	6KΩ	3.3Ω	440Ω	.6Ω	N-8329	A-3329	A-3026		

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	FIRESTONE PART No.	JENSEN PART No.	QUAM PART No.	
SP1A	PM	3.3Ω	N-6881	ST-113 (Mod. P4-X)	4A07	
	CONE DIA.	V. C. DIA.				
SP1B	4"	9/16"				

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	FIRESTONE PART No.	MERIT PART No.	
L1	Loop Ant.	.2Ω		N-8328		
L2	Osc. Coil	1.1Ω	5.2Ω	N-8327		
L3	Input IF	14.5Ω	14.5 Ω	N-7981	BC-352	
L4	Output IF	24Ω	22Ω	N-8326	BC-352	

SELENIUM RECTIFIER

ITEM No.	RATING	REPLACEMENT DATA				NOTES
	CURRENT	FIRESTONE PART No.	SYLVANIA PART No.	SELETRON PART No.	FEDERAL PART No.	
M1	.60ADC	N-8331	NB-5	8J1	1002A	

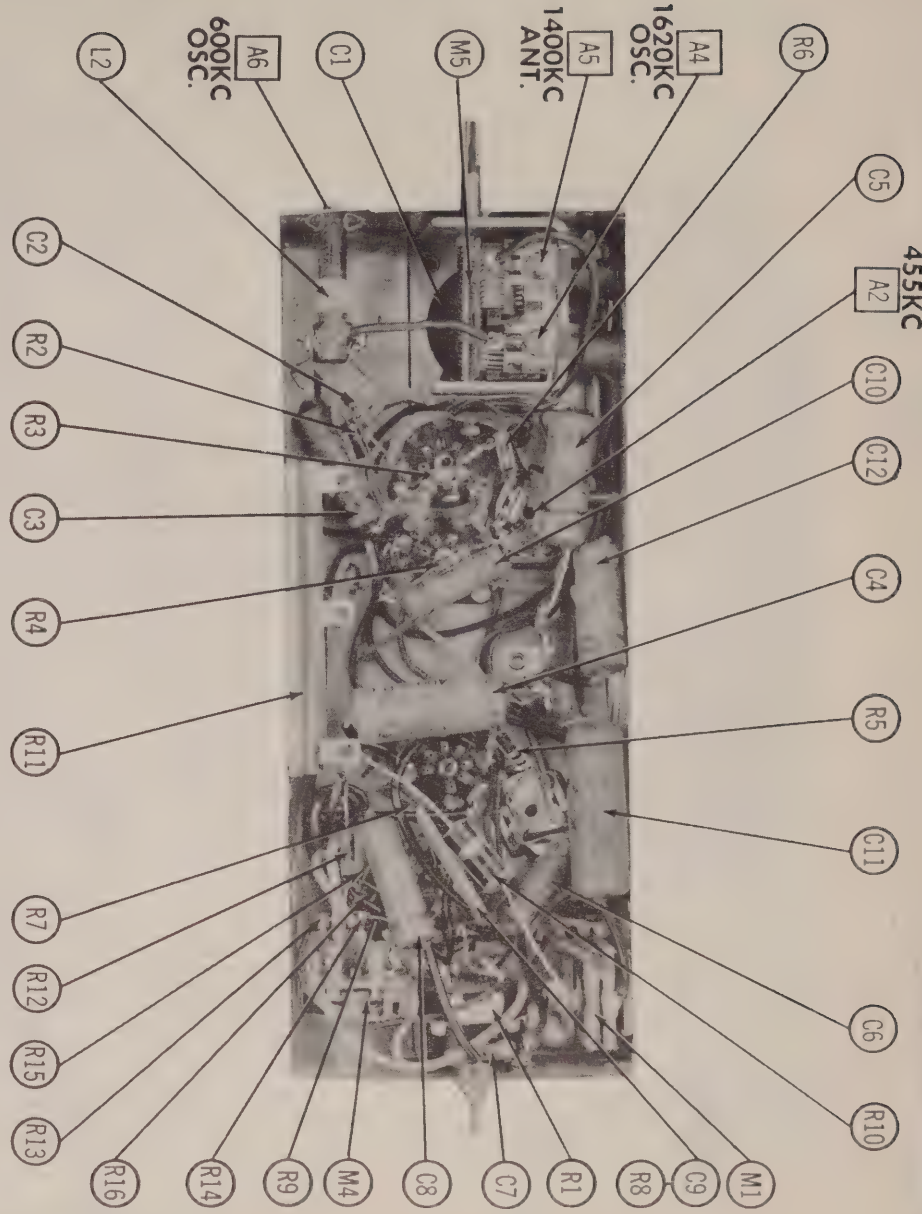
BATTERIES

ITEM No.	VOLTAGE	FIRESTONE PART No.	REPLACEMENT DATA						INSTALLATION NOTES
			EVEREADY			BURGESS			
			"A"	"B"	"A-B"	"A"	"B"	"A-B"	
M2	4.5V		726			D 3			
M3	90V			490			N60		

MISCELLANEOUS

ITEM No.	PART NAME	FIRESTONE PART No.	NOTES
M4	Switch	N-5951	Power Change-over
M5	2 Gang Var. Cap.	N-8321	(16-300MMF, 14-167MMF)
	Cabinet	335	Maroon - Model 4-C-19
	Cabinet	336	Green - MOdel 4-C-20
	Knob	N-8334	Model 4-C-19-Tuning
	Knob	N-8345	Model 4-C-19-Volume
	Knob	N-8335	Model 4-C-20-Tuning
	Knob	N-8346	Model 4-C-20-Volume
	Handle	N-8342	Model 4-C-19
	Handle	N-8410	Model 4-C-20

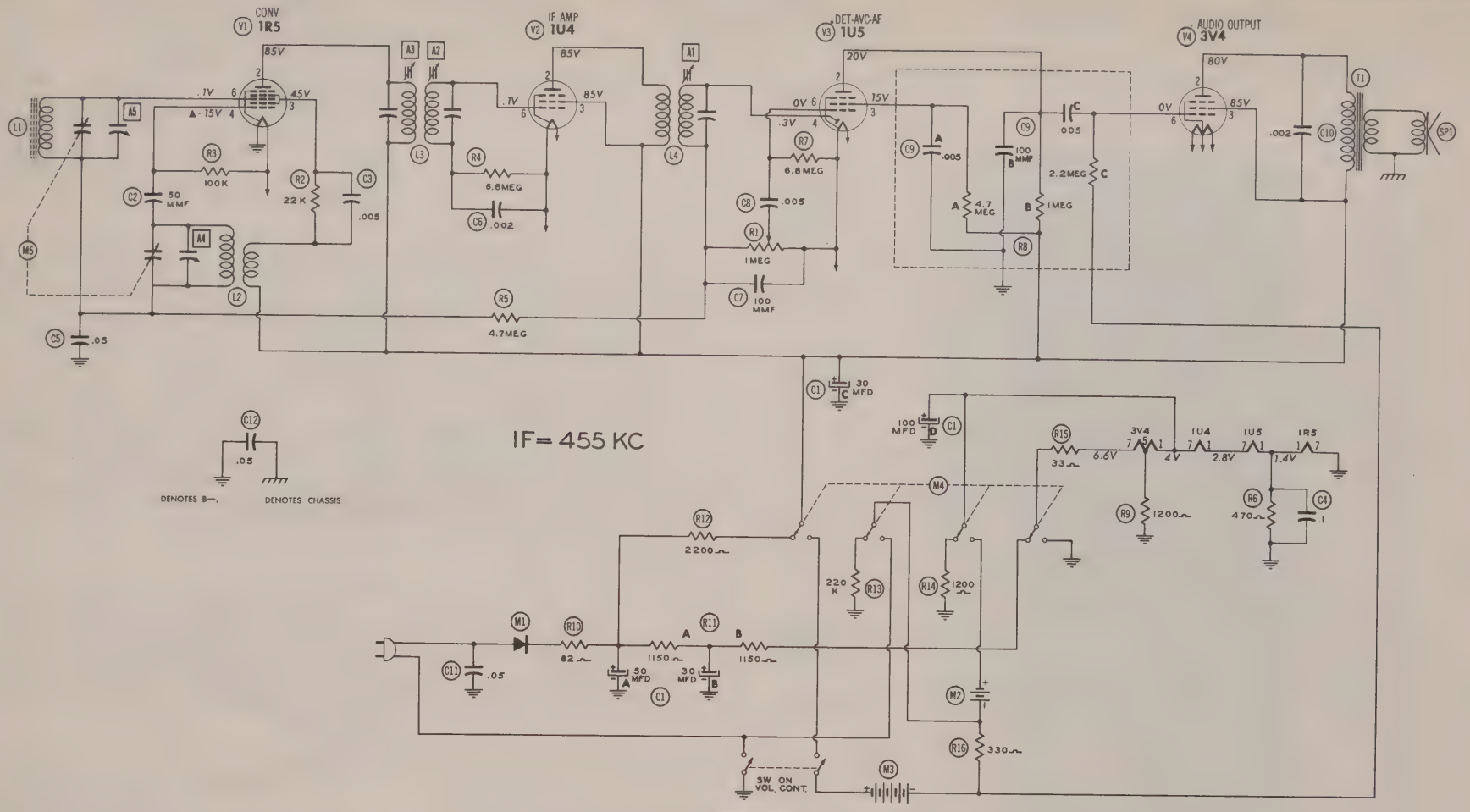
CHASSIS—BOTTOM VIEW



SET 170 FOLDER 7

FIRESTONE MODEL 4-C-19

FIRESTONE MODEL 4-C-19



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	1R5	*	†3.3KΩ	†24KΩ	100KΩ	*	5.7Meg	*
V 2	1U4	*	†2.3KΩ	†2.3KΩ	INF	*	6.8Meg	*
V 3	1U5	*	†1Meg	†4.7Meg	1Meg	5.7Meg	6.8Meg	*
V 4	3V4	*	†2.7KΩ	†2.3KΩ	200KΩ	*	2.4Meg	*

† MEASURED FROM OUTPUT OF M1
▲ TAKEN WITH VACUUM TUBE VOLTMETER
* DO NOT USE OHMMETER TO MEASURE FILAMENT RESISTANCE

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

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3924 MEADE ST.
DENVER, COLORADO

HALLICRAFTERS MODELS 5R30, A, 5R31, A, 5R32, A, 5R33, A, 5R34, A

Hallicrafters Model 5R30A

TRADE NAME	Hallicrafters Models 5R30, A, 5R31, A, 5R32, A, 5R33, A, 5R34, A
MANUFACTURER	Hallicrafters Co., 4401 W. 5th Ave., Chicago 24, Ill.
TYPE SET	AC-DC Operated AM Superheterodyne Receiver
TUBES (FIVE)	Types 12SA7GT Con., 12SK7 IF Amp., 12SQ7 Det.-AVC-AF Amp., 50L6GT Audio Output, 35Z5GT Rectifier.
POWER SUPPLY	110-120 Volts AC-DC — RATING .260 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540-1620KC — SHORT WAVE 6-18 MC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

To set pointer turn tuning gang fully closed and set pointer to coincide with the last mark at the low frequency end of dial scale. Use isolation transformer, if available. If not, connect a .1MFD Capacitor in series with low side of signal generator and chassis.

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01MFD	High side to stator plates of rear section of tuning capacitor. Low side to chassis.	455KC (400~ Mod.)	Broadcast	1000KC	Across voice coi.	A1, A2 A3, A4	Adjust for maximum output. If isolation transformer is not used, reduce dummy antenna to .001MFD to reduce hum modulation.
2.	Fig. 1	High side through dummy to antenna terminal. Low side to chassis.	14MC	Shortwave	14MC	"	A5, A6	Adjust for maximum output.
3.	"	"	1300KC	Broadcast	1300KC	"	A7, A8	"
4.	"	"	600KC	"	600KC	"	A9	"

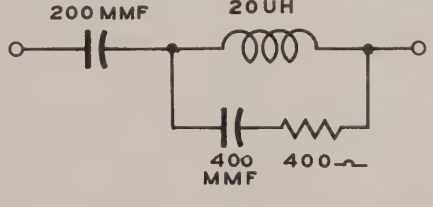

FIG. 1

"The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed."
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PARTS LIST AND DESCRIPTIONS

HALLICRAFTERS MODEL 5R30

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: Hallicrafters PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Converter	90X12SA7GT	12SA7GT	8AD	
V2	IF Amplifier	90X12SK7	12SK7	8N	
V3	Det.-AVC-AF Amp.	90X12SQ7	12SQ7	8Q	
V4	Audio Output	90X50L6GT	50L6GT	7AC	
V5	Rectifier	90X35Z5GT	35Z5GT	6AD	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: Hallicrafters PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	60	150	45B197	PRS150/80-40-20		EDL8415C		TVA-3455	Filter (Red) †
B	40	150							Filter (Blue) †
C	20	25							Output Cathode (Yellow) †
C2	2.2		47A160-4		TCZ-2.2		NP0K-2R2		Osc. Coupling *
C3	100		47X20UJ101K	SI100	D6-101	TM5T1	GP1K-101	5GA-T1	RF Coupling
C4	50		47X20UJ500K				N750K-500		Osc. Grid Cap.
C5	5600	500	47X30A562		D6-562		GP2-333-562		Conv. Cathode Bypass
C6	.05	200	46AU503J	P288-05	DF-503	PJ2S5		2TM-S5	Tuning Gang Isolation ‡
C7	.01	600	46AY103J	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Conv. Decoupling
C8	.05	200	46AU503J	P288-05	DF-503	PJ2S5		2TM-S5	AVC Filter
C9	.05	200	46AU503J	P288-05	DF-503	PJ2S5		2TM-S5	IF Amp. Cathode
C10	100		47X20UJ101K	SI100	D6-101	TM5T1	GP1K-101	5GA-T1	Diode RF Filter
C11	100		47X20UJ101K	SI100	D6-101	TM5T1	GP1K-101	5GA-T1	Diode RF Filter
C12	.01	600	46AY103J	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Audio Coupling
C13	100		47X20UJ101K	SI100	D6-101	TM5T1	GP1K-101	5GA-T1	AF Amp. Plate Bypass ¶
C14	1500			SI1500	D6-152	TM5D15	GP2L-152	5HK-D15	Audio Coupling † †
C15	.01	400	46AY103J	P488-01	D6-103	PTE4S1	GP2-333-103	4TM-S1	Audio Output Plate
C16	10000		47A217	BPD-01	DD-103	TM5S1	821-01	5HK-S1	Rectifier Plate ‡
C17	10000		47A217	BPD-01	DD-103	TM5S1	821-01	5HK-S1	Line Filter
C18	.05	600	46A150	P688-05		PTE6S5		6TM-S5	Line Isolation ‡‡

* Not used in all Models
† Some Models use 90 MFD (C1A), 60MFD (C1B), 20MFD (C1C) in this application (Part No. 45B197)
‡ Not used in Models 5R30, 5R31, 5R32, 5R33, 5R34
¶ Not used in Models 5R30A, 5R31A, 5R32A, 5R33A, 5R34A
† † Some Models use .01MFD (Part No. 46AX103J) or .001MFD (Part No. 46AZ102J in this application
‡‡ Resonate capacitor. Rewind coil on replacement unit to duplicate original

CONTROLS

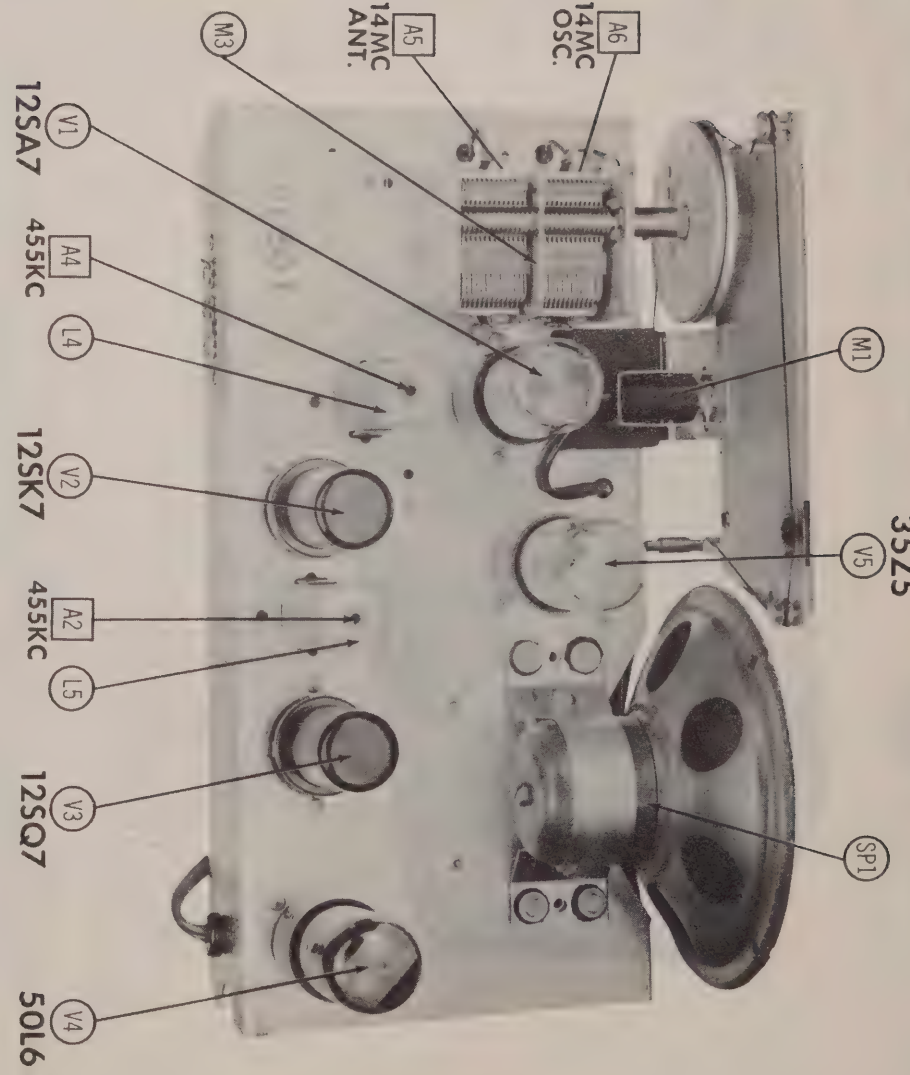
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: Hallicrafter PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	1Meg	½	25B965	Q13-137	AG-63-Z	BSK-70-S	Volume Control
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Attach to R1A per instructions
C	Switch		Not Req.	76-1	SWB	Not Req.	Attach to R1A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: Hallicrafter PART No.	IRC PART No.	IDENTIFICATION CODES
R2	47Ω	½	23X20X470K		Parasitic Suppressor - See Note 3
R3	1Meg	½	23X20X105M		Converter Grid
R4	56Ω	½	23X20X560K		Converter Cathode
R5	27KΩ	½	23X20X273K		Osc. Grid - See Note 1
R6	1000Ω	1		BTA-1000	Converter Decoupling - See Note 2
R7	2.2Meg	½	23X20X225M	BTS-2.2Meg	AVC Network
R8	47KΩ	½	23X20X473K	BTS-47K	Diode Filter
R9	10Meg	½	23X20X106M	BTS-10Meg	AF Amp. Grid
R10	270KΩ	½	23X20X274M	BTS-270K	AF Amp. Plate
R11	470KΩ	½	23X20X474M	BTS-470K	Output Grid
R12	150Ω	1	23X30X151K	BTA-150	Output Cathode
R13	820Ω	1	23X30X821M	BTA-820	Filter
R14	22Ω	½	23X20X220M		Surge Limiter
R15	15Ω	½	23X20X150M		Series Pilot Light
R16	270KΩ	½	23X20X274M	BTS-270K	Line Isolation
R17	56Ω	½	23X20X560K		IF Amp. Cathode

Note 1. Some Models use a 22KΩ Resistor in this application
Note 2. Some Models use a 1200Ω Resistor in this application
Note 3. Not used in Models 5R30, 5R31, 5R32, 5R33, 5R34

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		Hallicrafter PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T1	1.7KΩ	2.7Ω	190Ω	1Ω	55C181	A3332	A-3025	R0-2 ①	① Drill one new Mtg. hole.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	Hallicrafter PART No.	JENSEN PART No.	QUAM PART No.	
SP1A	P.M.	2.7Ω	85C110	ST105 Mod. P5-X	5A1	
	CONE DIA.	V. C. DIA.				
SP1B	5"	9/16"				

COILS (RF-IF)

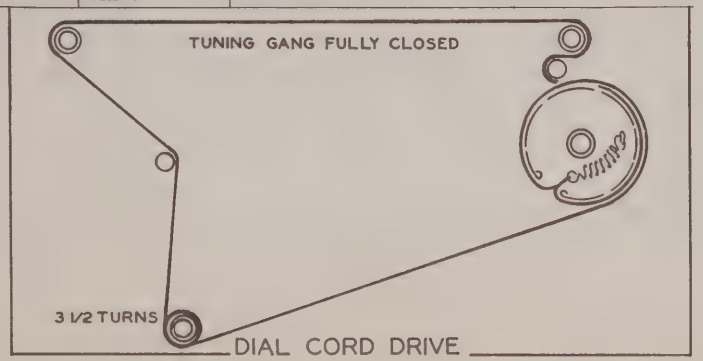
ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	Hallicrafter PART No.	MERIT PART No.	
L1A	SW Ant. Coil	.2Ω	.1Ω	51B1494		
L1B	BC Ant. Coil	0Ω	4Ω			Part of L1A
L2	SW Osc. Coil	0Ω		51B1493		
L3	BC Osc. Coil	4.8Ω		51B1495	BC-400	Tap ⓐ .8Ω
L4	Input IF	16Ω	16Ω	50B524	BC-352	
L5	Output IF	16Ω	16Ω	50B525	BC-353	

DIAL LIGHTS

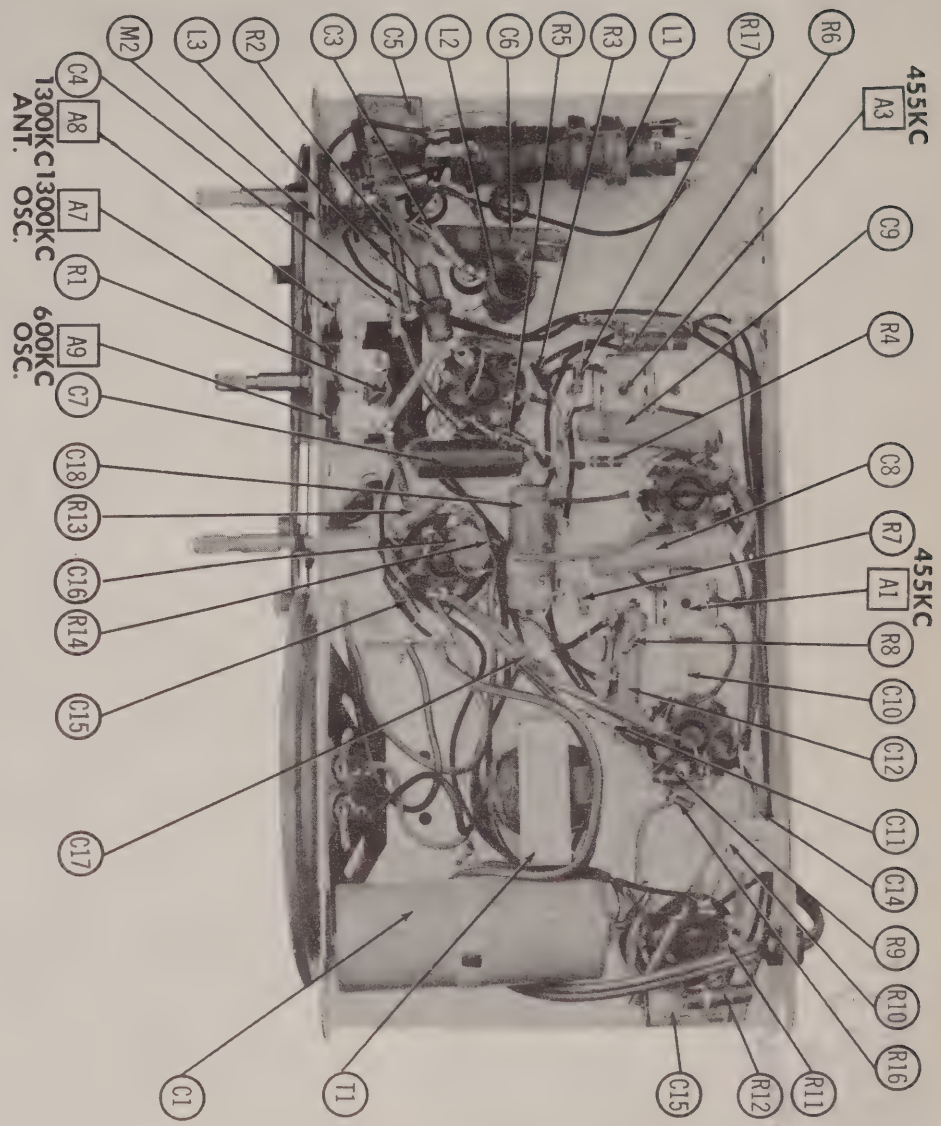
ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					Hallicrafter PART No.		
M1	Bayonet	6-8	.15	Brown	39A004		Type #47 (Mazda)

MISCELLANEOUS

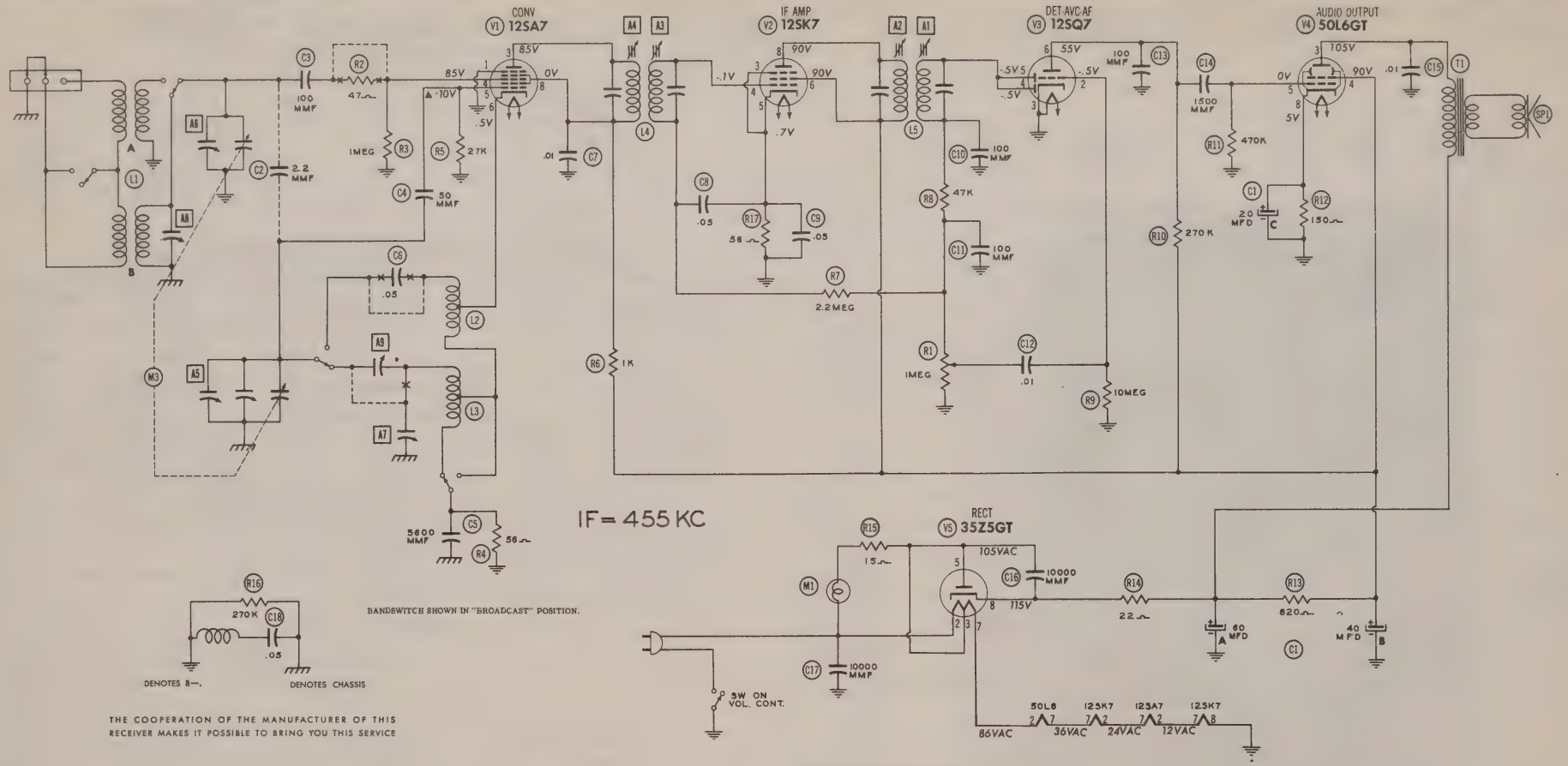
ITEM No.	PART NAME	Hallicrafter PART No.	NOTES
M2	Band Switch	60B472	
M3	2 Gang Var. Cap	48C282	(20-452MMF, 15-447MMF)
A7	Trimmer Strip	44C408	Osc. Adj.
A8			Osc. Padder — BC Band
A9			Ant. Adj.
	Cabinet	116E003	Model 5R30, A
	Cabinet	116E004	Model 5R31, A
	Cabinet	116E005	Model 5R32, A
	Cabinet	116E006	Model 5R33, A
	Cabinet	116E007	Model 5R34, A
	Pointer	82A211	



CHASSIS—BOTTOM VIEW



HALLICRAFTERS MODEL 5R30



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RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V 1	12SA7GT	¶0Ω	12Ω	†1.8KΩ	†1.8KΩ	27KΩ	56Ω	24Ω	1Meg
V 2	12SK7	¶0Ω	24Ω	56Ω	3.2Meg	56Ω	†840Ω	36Ω	†840Ω
V 3	12SQ7	¶0Ω	6.8Meg	0Ω	1Meg	1Meg	†270KΩ	12Ω	0Ω
V 4	50L6GT	INF	86Ω	†212Ω	†840Ω	470KΩ	0Ω	36Ω	150Ω
V 5	35Z5GT	INF	121Ω	118Ω	†840Ω	118Ω	†22Ω	86Ω	60KΩ

ALL MEASUREMENTS TAKEN IN "BC" POSITION
† MEASURED FROM PIN 8 OF V5
▲ TAKEN WITH VACUUM TUBE VOLTMETER
¶ MEASURED FROM CHASSIS:

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1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PHOTOFACT* Folder

*TRADE MARK

KAYE-HALBERT
MODEL 114DX (Ch. DX253)

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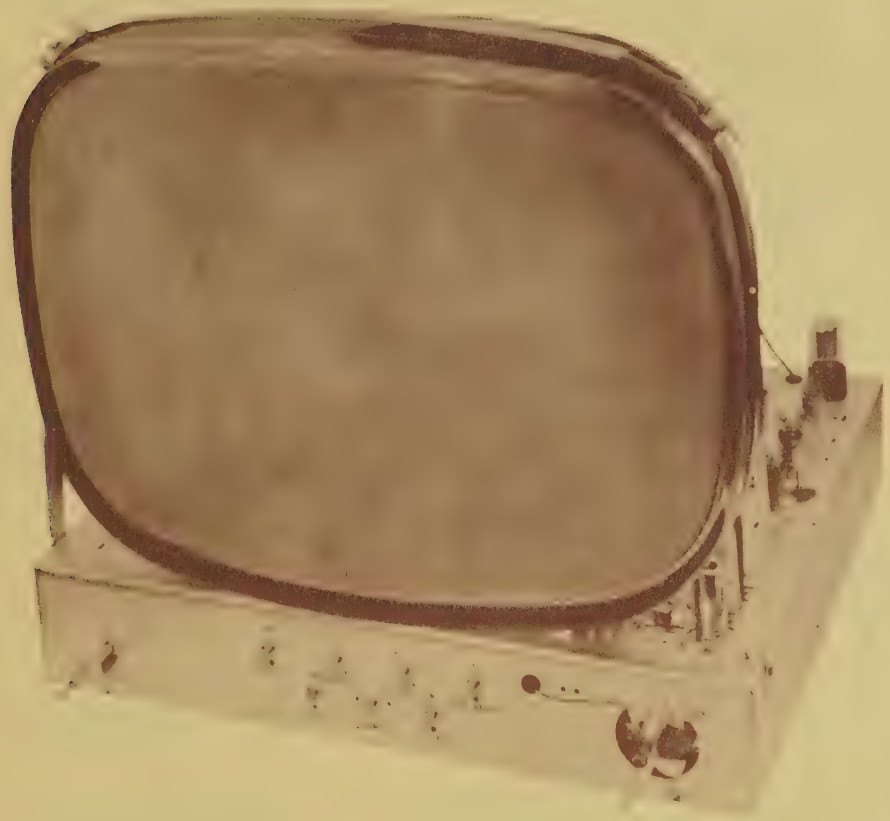

MODEL 114DX

KAYE-HALBERT
MODEL 114DX (Ch. DX253)

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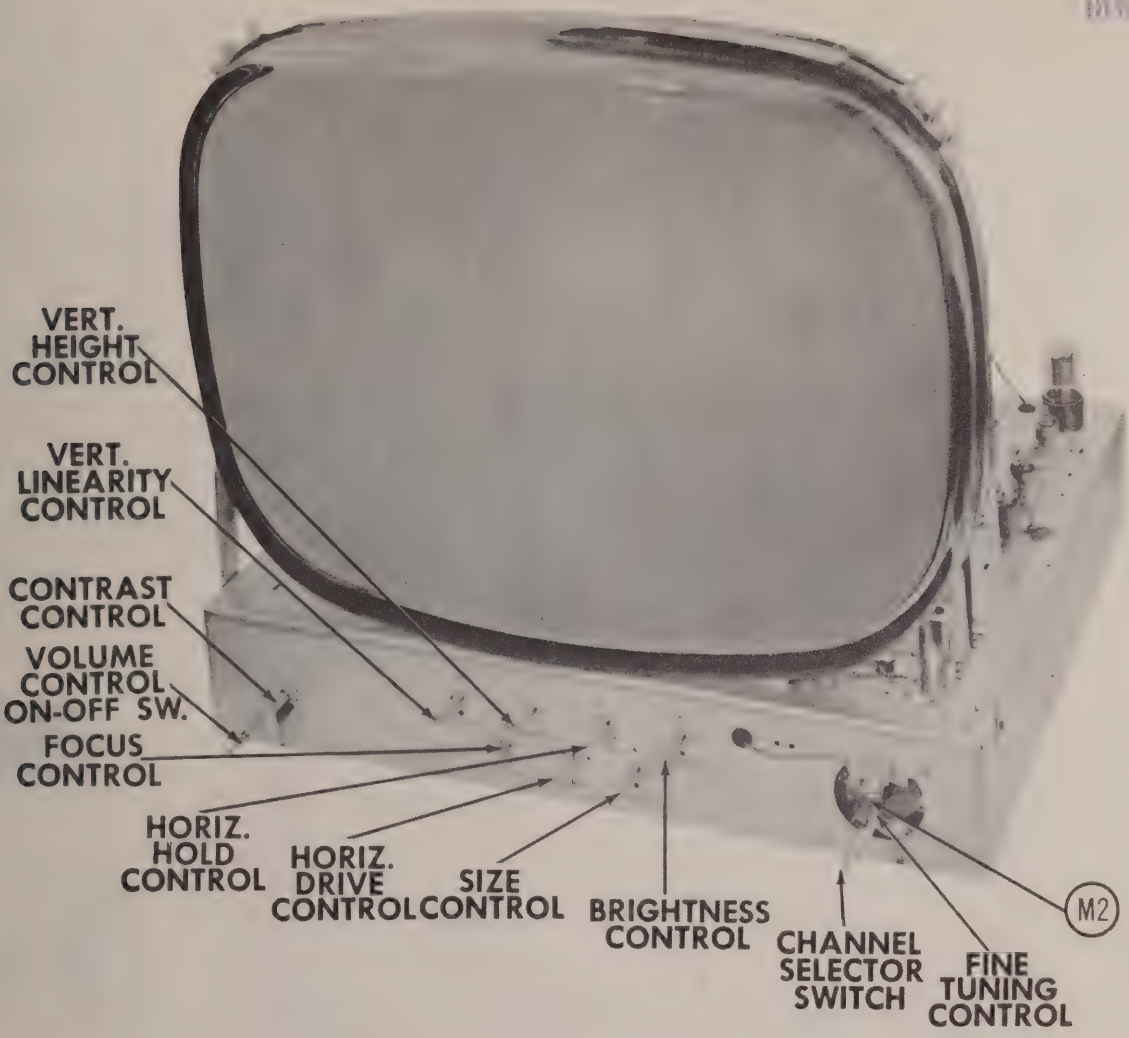
DATE 6-52 SET 170 FOLDER 9

KAYE-HALBERT
MODEL 114DX (Ch. DX253)

PROPERTY



KAYE-HALBERT
MODEL 114DX (Ch. DX253)

TRADE NAME	Kaye Halbert Model 114DX (Ch.DX253)
MANUFACTURER	Kaye Halbert Corp., 3555 Hayden Ave., Culver City, Calif.
TYPE SET	Television Receiver
TUBES	Twenty Five
POWER SUPPLY	110-120 Volts AC - 60 Cycle
RATING	1.9 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13

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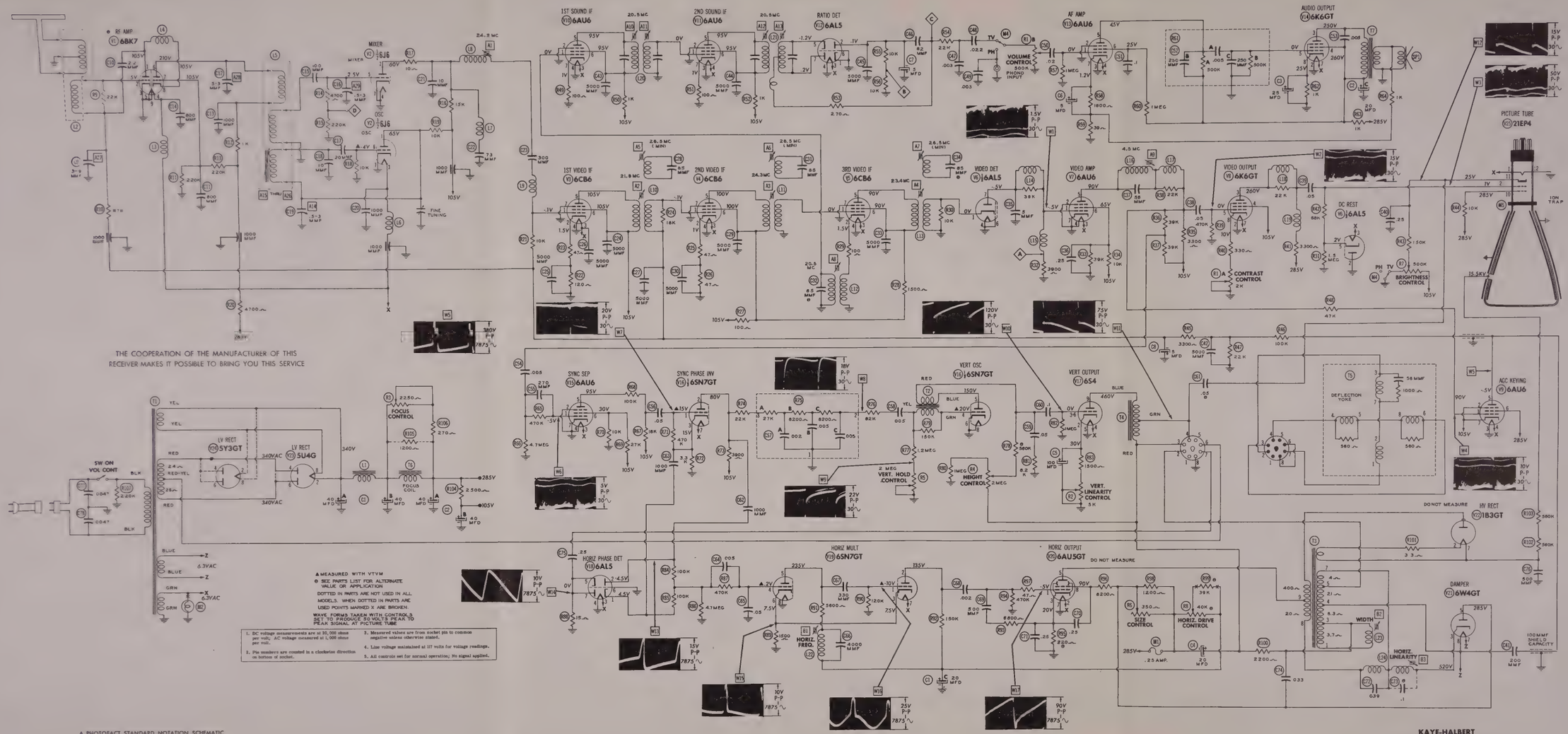
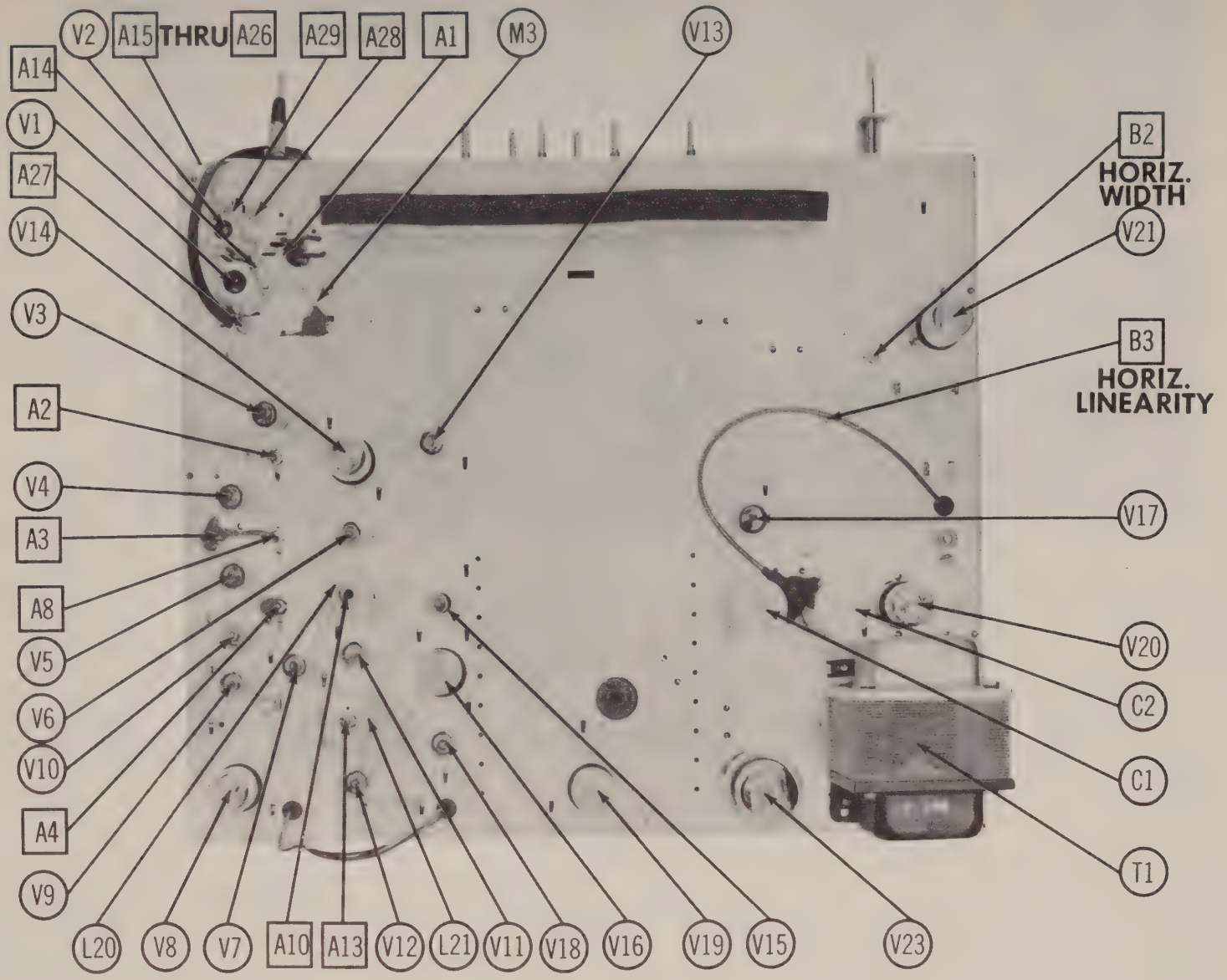
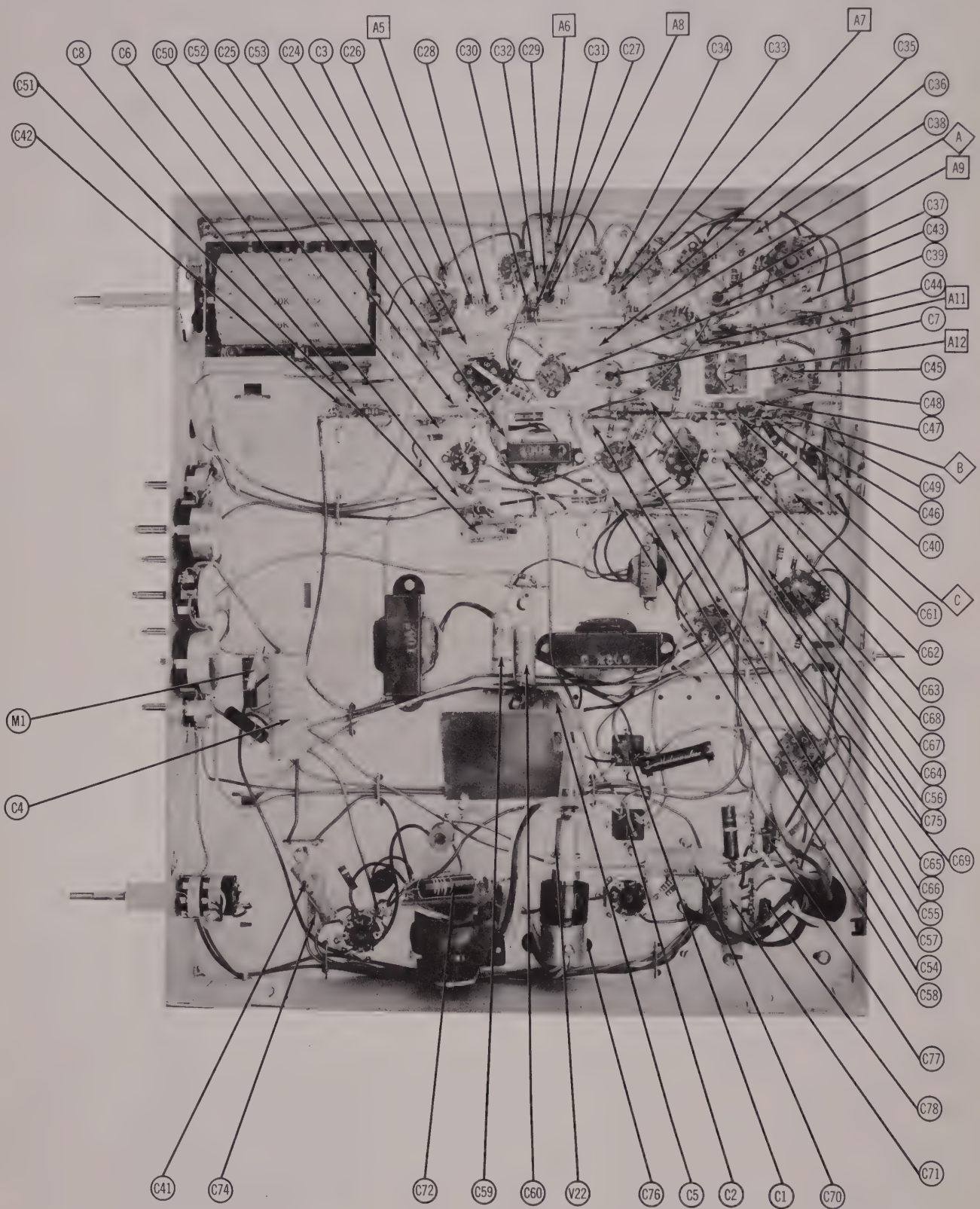
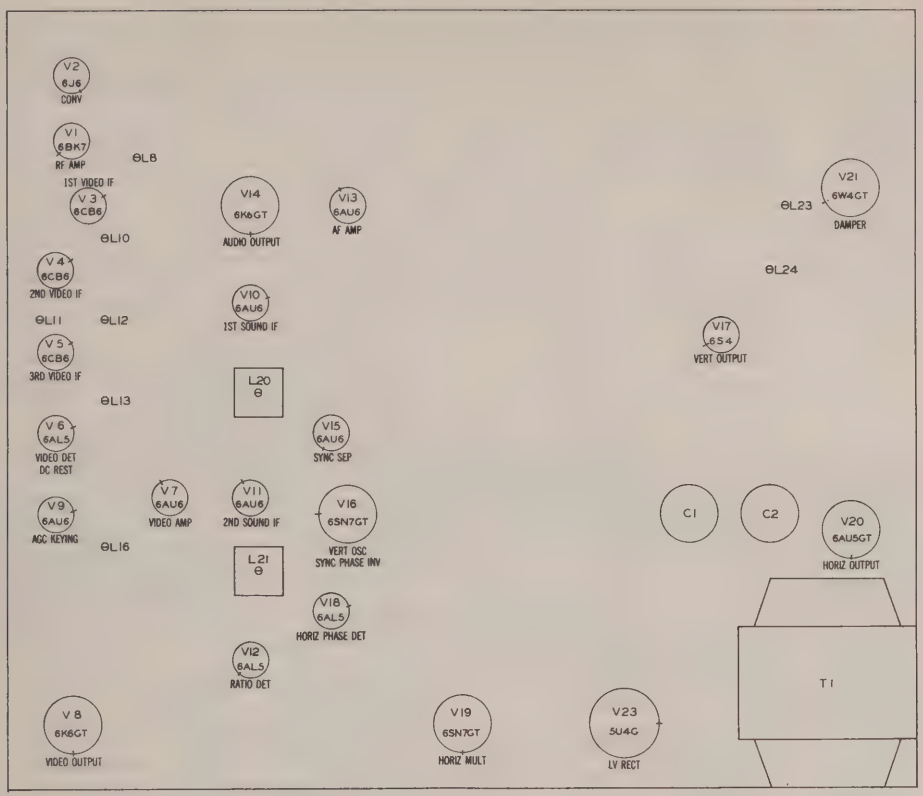

KAYE-HALBERT
MODEL 114DX (Ch. DX253)
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
RF AMP. V1 6BK7
MIXER V2 6J6
OSC V2 6J6
1ST SOUND IF V10 6AU6
2ND SOUND IF V11 6AU6
RATIO DET V12 6AL5
AF AMP V13 6AU6
AUDIO OUTPUT V14 6K6GT
1ST VIDEO IF V3 6CB6
2ND VIDEO IF V4 6CB6
3RD VIDEO IF V5 6CB6
VIDEO DET V6 6AL5
VIDEO AMP V7 6AU6
VIDEO OUTPUT V8 6K6GT
DC REST V16 6AL5
PICTURE TUBE V23 21EP4
LV RECT V24 5Y3GT
LV RECT V23 5U4G
SYNC SEP V15 6AU6
SYNC PHASE INV V16 6SN7GT
VERT OSC V18 6SN7GT
VERT OUTPUT V17 6S4
AGC KEYING V9 6AU6
HORIZ PHASE DET V19 6AL5
HORIZ MULT V18 6SN7GT
HORIZ OUTPUT V20 6AU5GT
DO NOT MEASURE
HV RECT V22 1B3GT
DAMPER V22 6W4GT
SW ON VOL CONT
FOCUS CONTROL
FOCUS COIL
VOLUME CONTROL 500K PHONO INPUT
VERT. HOLD CONTROL
HEIGHT CONTROL
VERT. LINEARITY CONTROL
CONTRAST CONTROL 2K
BRIGHTNESS CONTROL
DEFLECTION YOKE
ION TRAP
SIZE CONTROL
HORIZ. DRIVE CONTROL
HORIZ. FREQ.
HORIZ. LINEARITY
WIDTH
FINE TUNING
MEASURED WITH VTVM
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DOTTED IN PARTS ARE NOT USED IN ALL MODELS. WHEN DOTTED IN PARTS ARE USED POINTS MARKED X ARE BROKEN.
WAVE FORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK TO PEAK SIGNAL AT PICTURE TUBE
1. DC voltage measurements are at 20,000 ohms per volt; AC voltage measured at 1,000 ohms per volt.
2. Pin numbers are counted in a clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation; No signal applied.
A PHOTOFACT STANDARD NOTATION SCHEMATIC
© Howard W. Sams & Co., Inc. 1952
KAYE-HALBERT
MODEL 114DX (Ch. DX253)



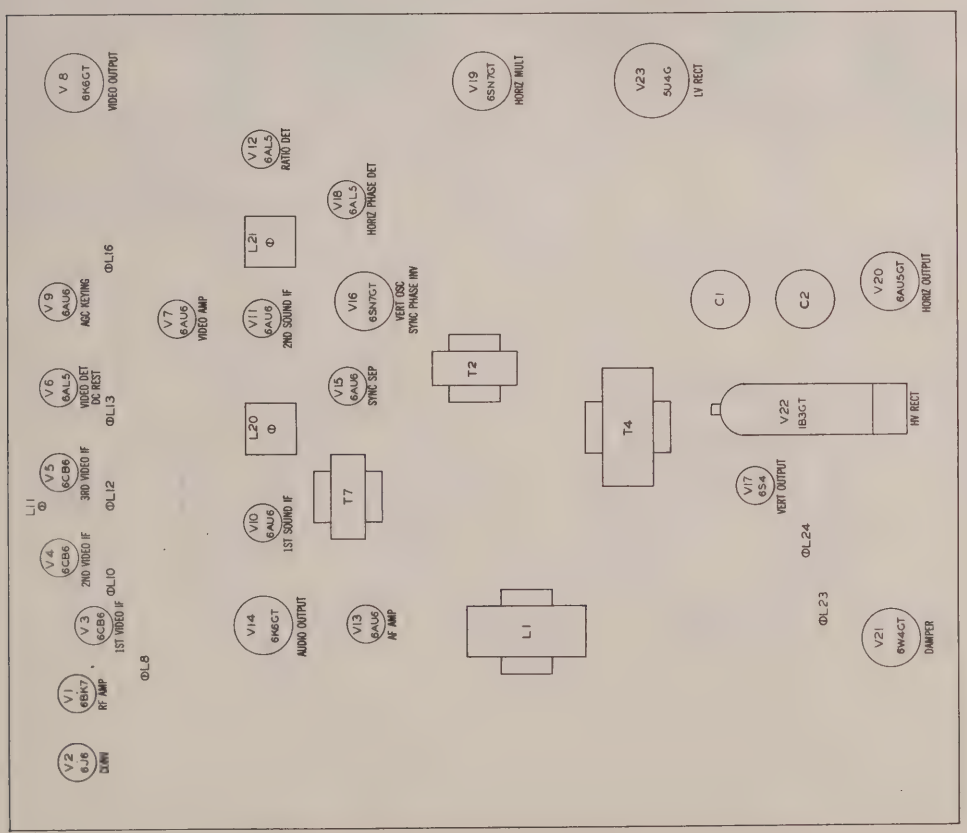
CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION



TOP VIEW



BOTTOM VIEW

TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage shock hazard may be eliminated by removing the horizontal oscillator tube, V19, from its socket.

VIDEO IF ALIGNMENT

Connect the negative lead of a3 volt bias battery to the ungrounded side of C42. Conncet the positive lead to chassis. Remove the converter tube, V2, from its socket and replace with a 6J6 which as had pin 1 removed. This will disable the oscillator circuit and reduce the possiblity of erroneous indications.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy. Converter tube V2. Low side to chassis.	24.2MC (Unmod.)	Any	DC probe to point (A) Common to chassis.	A1	Adjust for maximum deflection.
2.	"	"	21.8MC	"	"	A2	"
3.	"	"	24.3MC	"	"	A3	"
4.	"	"	23.4MC	"	"	A4	"
5.	"	"	26.5MC	"	"	A5, A6, A7	Adjust for MINIMUM deflection. Recheck A2, A3, &A4.
6.	"	"	20.5MC	"	"	A8	Adjust for MINIMUM deflection.

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
7.	Direct	High side to ungrounded tube shield floating over dummy converter tube (V2). Low side to chassis.	24 MC (10MC Swp)	20.5MC 22MC 25MC	Any	Vert. amp. to point (A) Low side to chassis.		Check for response curve similar to fig. 1 If necessary retouch A1 through A4 for proper response. If A2, A3 or A4 are changed recheck traps A5, A6 or A7.

4.5MC TRAP ADJUSTMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	.01MFD	High side to point (A) Low side to chassis.	Not used.	4.5MC (400~ Mod.)	Any	Vert. Amp to pin 2 of picture tube. Low side to chassis.	A9	Adjust for MINIMUM 400~ indication on scope.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
9.	.01MFD	High side to pin 1 (grid) of 6AU6 (V10). Low side to chassis.	20.5MC (unmod.)	Any	DC probe to point (B) Common to chassis.	A10, A11, A12	Adjust for maximum deflection.
10.	"	"	"	"	DC probe to point (C) Common to point (B)	A13	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60~ modulation and 450 KC sweep. Use 120~ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
9.	.01MFD	High side to pin 1 (grid) of 6AU6, (V10) Low side to chassis.	20.5MC (450KC Swp)	20.5MC	Any	Vert. Amp. to point (B) Low side to chassis.	A10, A11, A12	Disconnect stabilizer capacitor C7. Adjust for maximum amplitude and symmetry as per fig. 2
10.	"	"	"	"	"	Vert. amp. to point (C) Low side to chassis.	A13	Reconnect capacitor C7. Adjust A13 so 20.5MC occurs at center of crossover lines as per fig. 3. SLIGHTLY retouch A12 for maximum amplitude and straightness of crossover lines.

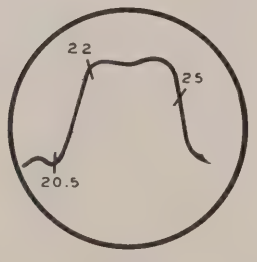


FIG. 1

FIG. 2

ALIGNMENT INSTRUCTIONS (CONT.)

OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket
Complete oscillator alignment may not be necessary. If the oscillator seems to be off frequency approximately the same amount for a majority of the channels it may be possible to correct them in one step using A14. It should be noted that this is an all channel oscillator circuit adjustment and should not be used to correct for any single channel. If adjustment of A14 will not bring all channels well within the range of the fine tuning control it will be necessary to adjust the channel strip adjustment for each channel that is off frequency. The channel strip adjustment screws are reached through a hole just to the right of the channel switch shaft. The correct adjustment screw is accessible through this hole as the channel switch is turned to each channel.
The signal generator output lead should be terminated with its characteristic impedance, usually 50 ohms
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
11.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω 1/7 each lead	215.75MC (Unmod.)	13	DC probe to point ◇C. Common to point ◇B	A15	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.
			209.75MC	12		A16	
			203.75MC	11		A17	
			197.75MC	10		A18	
			191.75MC	9		A19	
			185.75MC	8		A20	
			179.75MC	7		A21	
			87.75MC	6		A22	
			81.75MC	5		A23	
			71.75MC	4		A24	
			65.75MC	3		A25	
			59.75MC	2		A26	

RF AND MIXER ALIGNMENT

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
12.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	207MC (10MC Swp)	205.25MC 209.75MC	12	Vert. amp. thru 10KΩ to point ◇D. Common to chassis.	A27, A28 A29	Adjust for response curve similar to fig. 4 with markers above 90%.
13.	"	"	213MC (10MC Swp)	211.25MC 215.75MC	13	"		Check all channels for response similar to fig. 4, If markers fall below 70% on any channel make slight compromise adjustment of A27, A28 and A29 with channel selector set for that channel. Recheck all channels to see that they have not been seriously affected.
			201MC (10MC Swp)	199.25MC 203.75MC	11			
			195MC (10MC Swp)	193.25MC 197.75MC	10			
			189MC (10MC Swp)	187.25MC 191.75MC	9			
			183MC (10MC Swp)	181.25 MC 185.75MC	8			
			177MC (10MC Swp)	175.25MC 179.75MC	7			
			85MC (10MCSwp)	83.25MC 87.75MC	6			
			79MC (10MC Swp)	77.25MC 81.75MC	5			
			69MC (10MC Swp)	67.25MC 71.75MC	4			
			63 MC (10MC Swp)	61.25MC 65.75MC	3			
			57MC (10MC Swp)	55.25MC 59.75MC	2			

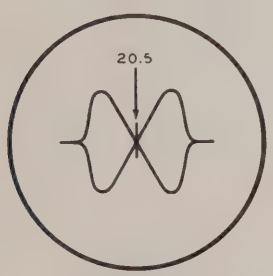


FIG. 3

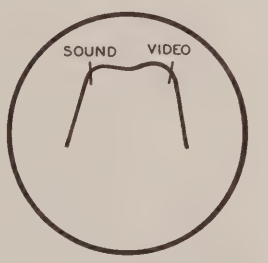
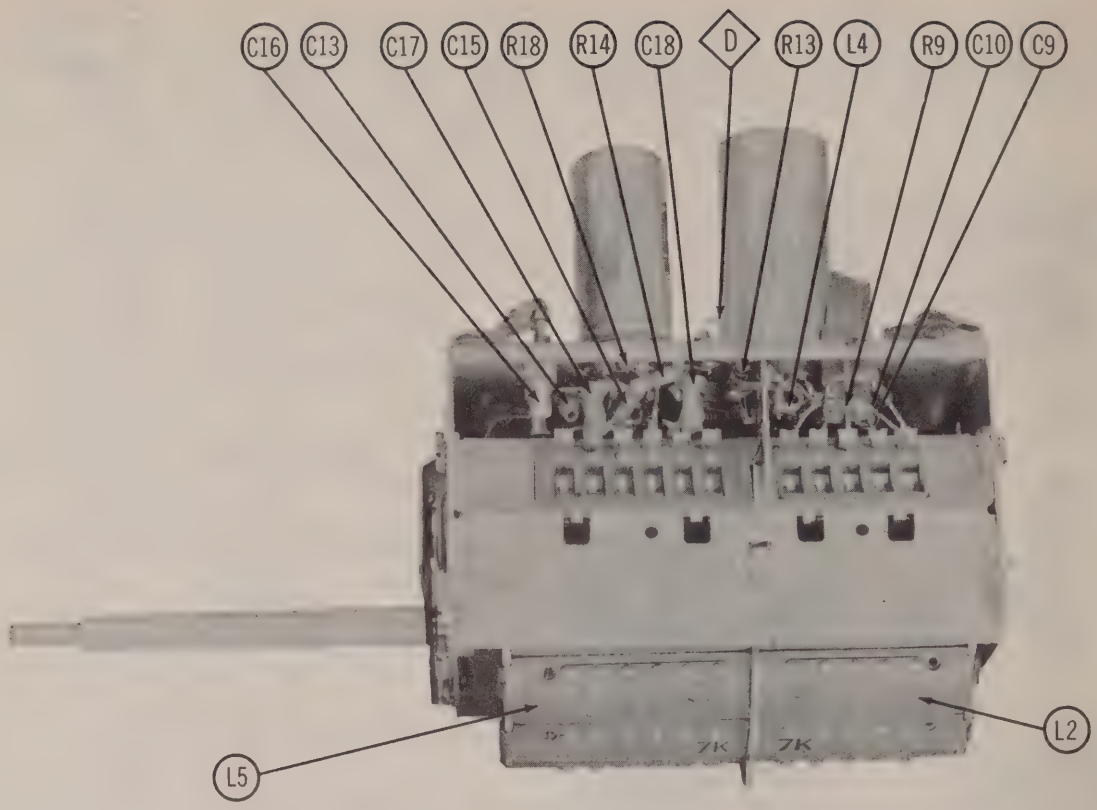


FIG. 4

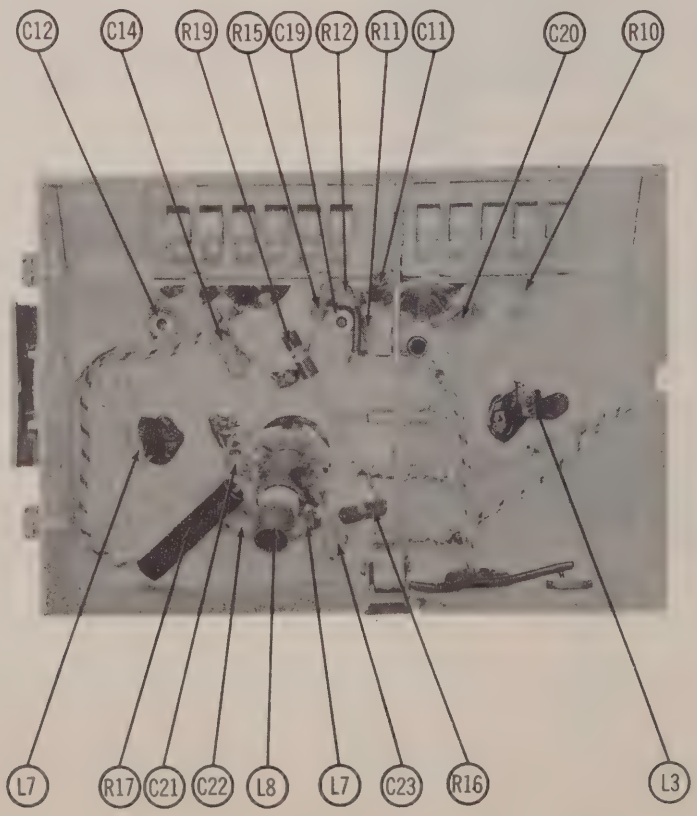
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BK7	INF	72KΩ	0Ω	.1Ω	0Ω	†5.9KΩ	110KΩ	INF	0Ω
V 2	6J6	†12KΩ	†17KΩ	.1Ω	0Ω	220KΩ	10KΩ	0Ω		
V 3	6CB6	35KΩ	167Ω	.1Ω	0Ω	†2.7KΩ	†2.7KΩ	0Ω		
V 4	6CB6	25KΩ	95Ω	.1Ω	0Ω	†2.8KΩ	†2.8KΩ	0Ω		
V 5	6CB6	.2Ω	100Ω	.1Ω	0Ω	†4.3KΩ	†4.3KΩ	0Ω		
V 6	6AL5	.2Ω	0Ω	.1Ω	0Ω	1.5Meg	0Ω	3.9KΩ		
V 7	6AU6	3.9KΩ	0Ω	.1Ω	0Ω	†6KΩ	†10KΩ	0Ω		
V 8	6K6GT	INF	0Ω	†3.5KΩ	†2.7KΩ	470KΩ	1KΩ	.1Ω	1.4KΩ	
V 9	6AU6	†53KΩ	†2.7KΩ	0Ω	.1Ω	120KΩ	†190Ω	†2.7KΩ		
V 10	6AU6	0Ω	0Ω	.1Ω	0Ω	†3.7KΩ	†3.7KΩ	100Ω		
V 11	6AU6	.1Ω	0Ω	0Ω	.1Ω	†3.7KΩ	†3.7KΩ	100Ω		
V 12	6AL5	0Ω	20KΩ	.1Ω	0Ω	INF	0Ω	INF		
V 13	6AU6	1Meg	0Ω	0Ω	.1Ω	†500KΩ	†1Meg	1.8KΩ		
V 14	6K6GT	0Ω	0Ω	†1.8KΩ	†1.2KΩ	500KΩ	†4.9KΩ	.1Ω	1KΩ	
V 15	6AU6	5.1Meg	0Ω	.1Ω	0Ω	†120KΩ	8KΩ	0Ω		
V 16	6SN7GT	470KΩ	†6.6KΩ	3.3KΩ	2Meg	#1.2Meg	0Ω	.1Ω	0Ω	
V 17	6S4	INF	3KΩ	1Meg	.1Ω	0Ω	1Meg	INF	INF	#3.9KΩ
V 18	6AL5	4.8Meg	4.8Meg	.1Ω	0Ω	15Ω	0Ω	15Ω		
V 19	6SN7GT	120KΩ	†155KΩ	1.5KΩ	5.1Meg	†9KΩ	1.5KΩ	.1Ω	0Ω	
V 20	6AU5GT	470KΩ	.1Ω	220Ω	INF	#26Ω	INF	0Ω	†8.3KΩ	
V 21	6W4GT	#2.2KΩ	INF	60KΩ	INF	†195Ω	INF	#25Ω	#25Ω	
V 22	1B3GT	PINS 1 THRU 8 HAVE INF RESISTANCE								TOP CAP #426Ω
V 23	5U4G	INF	20KΩ	INF	24Ω	INF	26Ω	INF	20KΩ	
V 24	21EP4A	.1Ω	1.6Meg	PIN 10 †10KΩ	PIN 11 190KΩ	PIN 12 0Ω				

ALL CONTROLS SET FOR NORMAL OPERATION, NO SIGNAL APPLIED
† MEASURED FROM PIN 2 OF V23
# MEASURED FROM PIN 3 OF V21



RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW

PROPERTY OF
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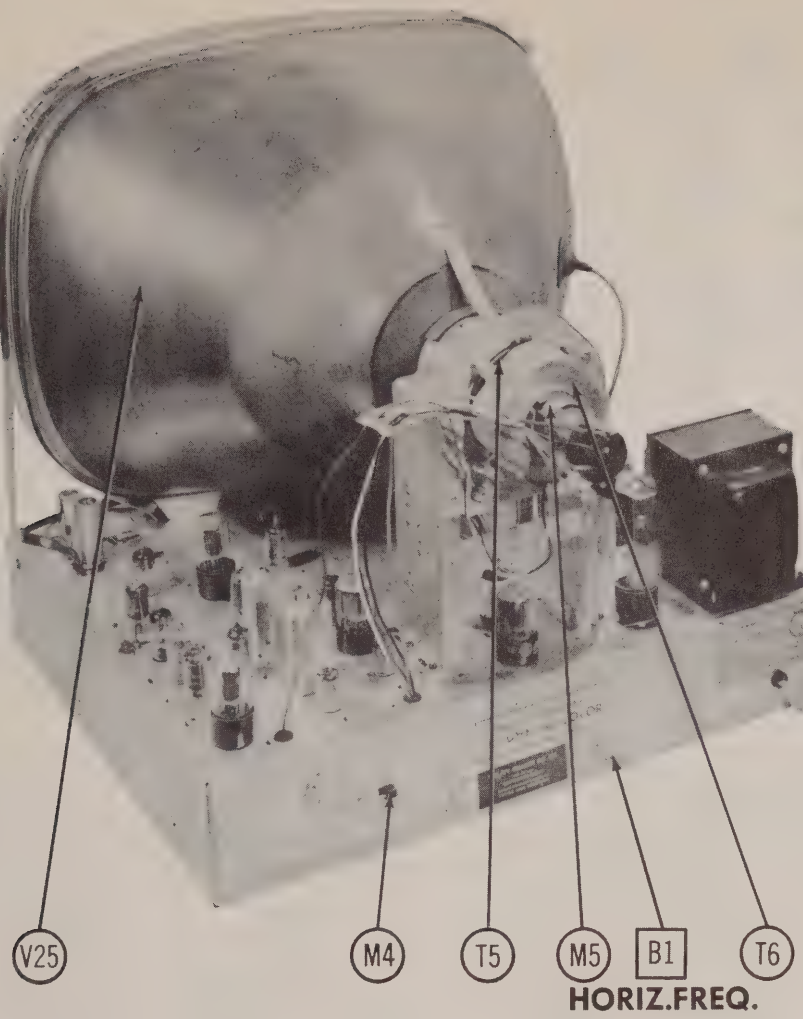
3924 MEADE ST.
DENVER, COLORADO



CHASSIS–REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

HORIZONTAL OSCILLATOR ADJUSTMENTS

Turn the set on and tune in a TV Station, preferably a test pattern.

Adjust the horizontal frequency slug, (B1) until the picture synchronizes horizontally.

Adjust the horizontal drive control for best compromise between brightness and horizontal linearity.

Adjust the horizontal width slug, (B2) for a picture slightly wider than the picture mask.

Adjust the horizontal linearity slug, (B3) until picture is symmetrical from left to right.

If sufficient width cannot be obtained through adjustment of B2 adjust the size control and the height and vertical linearity controls for desired result.

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No	USE	REPLACEMENT DATA: Kaye-Halbert PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1A	RF Amplifier		6BK7	8AJ	
V1B	RF Amplifier		6BQ7	9AJ	
V2	Converter		6J6	7BF	
V3	1st. Video IF Amp.		6CB6	7CH	
V4	2nd Video IF Amp.		6CB6	7CH	
V5	3rd Video IF Amp.		6CB6	7CH	
V6	Video Detector - DC Restorer		6AL5	6BT	
V7	Video Amplifier		6AU6	7BK	
V8	Video Output		6K6GT	7AC	
V9	AGC Keying		6AU6	7BK	
V10	1st. Sound IF Amp.		6AU6	7BK	
V11	2nd. Sound IF Amp.		6AU6	7BK	
V12	Ratio Detector		6AL5	6BT	
V13	AF Amplifier		6AU6	7BK	
V14	Audio Output		6K6GT	7S	
V15	Sync. Separator		6AU6	7BK	
V16	Vert. Oscillator - Sync Phase Inv		6SN7GT	8BD	
V17	Vert Output		6S4	9AC	
V18	Horiz Phase Det.		6AL5	6BT	
V19	Horiz Mult.		6SN7GT	8BD	
V20	Horiz. Output		6AU5GT	6CK	
V21	Damper		6W4GT	4CG	
V22	HV Rectifier		1B3GT	3C	
V23A	L. V. Rect.		5U4G	5T	Not used in all Models
B	L. V. Rect.		5Y3GT	5T	Not used in all Models
V24	L.V. Rect.		5Y3GT	5T	Not used in all Models

CATHODE-RAY TUBE

ITEM No	REPLACEMENT DATA: Kaye-Halbert PART No.	REPLACEMENT DATA: SYLVANIA PART No.	RTMA BASE TYPE	NOTES
V25	21EP4A	21EP4A	12D	① Add high voltage capacitor
		21EP4 ①	12D	② Tape focus coil to chassis. Circuit changes
		21FP4 ②	12C	necessary,
		21FP4A ②	12C	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: Kaye-Halbert PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	400		AFH3-43		UPT44145		R1060	▲ Filter
B	40	400							■ Filter
C	20	400							▲ Horiz. MV Dec.
C2A	40	400		AFH3-43		UPT44145		R1060	■ Filter
B	40	400							▲ Decoupling
C	20	400							▲ Audio Output Dec.
C3	25	50		PRS50/25		BR255A		TVA-1306	Audio Output Cathode
C4	20	350		PRS450/20		BR2035A		TVA-1608	Vert. Output Dec.
C5	100	50		PRS50/100		BRH501		TVA-1310	Vert. Output Cathode
C6	5	50		PRS150/4		BR550		TVA-1303	AF Amp. Cathode
C7	5	50		PRS150/4		BR550		TVA-1303	StabilizingCap.
C8	5	50		PRS150/4		BR550		TVA-1303	AGC Filter
C9	3-9				829-10				Variable Trimmer
C10	2.2				TCZ-2.2		NP0K-2R2		Neutralizing Cap.
C11	800			BPD-0008	DD-801	TM5T8	801-001	5HK-D1	RF Amp. Grid Bypass
C12	.5-3				829-3				Variable Trimmer
C13	1000			BPD-001	DD-102	TM5D1	801-001	5HK-D1	RF Amp. Plate Dec.
C14	800			BPD-0008	DD-801	TM5T8	801-001	5HK-D1	RF Amp. Fil. Bypass
C15	100			SI100	D6-101	TM5T1	GP1K-101	5GA-T1	RF Coupling
C16	.5-3				829-3				Variable Trimmer
C17	20			SI20NP0	TCZ-20		NP0K-200		Osc. Grid Cap.
C18	10			SI10N750	TCN-10		N750K-100	5TCU-Q1	Fixed Trimmer
C19	.5-3				829-3				Variable Trimmer
C20	1000			SI1000	D6-102	TM5D1	GP2L-102	5HK-D1	Conv. Fil. Bypass
C21	10			SI10NP0	TCZ-10		NP0K-100	5TCC-Q1	Fixed Trimmer
C22	72								Fixed Trimmer
C23	300			SI 300	D6-301	5W5T3	GP2K-301		IF Coupling
C24	5000			BPD-005	DD-502	TM5D5	811-005	5HK-D5	1st. Video IF Dec.
C25	5000			BPD-005	DD-502	TM5D5	811-005	5HK-D5	1st. Video IF Cathode
C26	5000			BPD-005	DD-502	TM5D5	811-005	5HK-D5	1st. Video IF Fil.
C27	5000			BPD-005	DD-502	TM5D5	811-005	5HK-D5	AGC Filter
C28	85	500							Fixed Trimmer
C29	5000			BPD-005	DD-502	TM5D5	811-005	5HK-D5	2nd. Video IF Dec.
C30	5000			BPD-005	DD-502	TM5D5	811-005	5HK-D5	2nd. Video IF Cathode
C31	85	500							Fixed Trimmer
C32	85	500							Fixed Trimmer †
C33	5000			BPD-005	DD-502	TM5D5	811-005	5HK-D5	3rd. Video IF Dec.
C34	85	500							Fixed Trimmer †
C35	5			SI5	TCZ-4.7	5W5V5	GP1K-050	MS-55	Video Det. Filter
C36	.25	300		P488-25		PJ2P25		2TM-P25	Video Amp. Screen
C37	56			SI56	D6-560		GP1K-560		Fixed Trimmer
C38	.05	600		P688-05	DF-503	PTE6S5		6TM-S5	Video Coupling
C39	.05	600		P688-05	DF-503	PTE6S5		6TM-S5	Video Coupling
C40	.25	300		P488-25		PJ2P25		2TM-P25	Picture Tube Cathode
C41	300								Horiz. Feedback
C43	5000			BPD-005	DD-502	TM5D5	811-005	5HK-D5	AGC Filter
C43	5000			BPD-005	DD-502	TM5D5	811-005	5HK-D5	1st. Sound IF Dec.
C44	5000			BPD-005	DD-502	TM5D5	811-005	5HK-D5	2nd. Sound IF Dec.
C45	5000			BPD-005	DD-502	TM5D5	811-005	5HK-D5	RF Bypass
C46	82	500							Diode Load Cap.
C47	.003	400		P688-003	D6-302	PTE6D3	GP2-333-302	6TM-D3	De-emphasis
C48	.022	400		P488-022	DF-203	PTE4S22		4TM-S22	Audio Coupling
C49	.003	600		P688-003	D6-302	PTE6D3	GP2-333-302	6TM-D3	Tone Comp.
C50	.02	400		P488-03	DF-303	PTE4S2		4TM-S2	Audio Coupling
C51	.1	400		P488-1	DF-104	PTE4P1		4TM-P1	AF Amp. Screen Bypass

CAPACITORS (CONT.)

ITEM No	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: Kaye-Halbert PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C52A	.005								Audio Coupling
B	250				†PC-70				AF Amp. Plate Bypass
C									Audio Output Grid
C53	.005	600		P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Audio Output Plate
C54	.005	600		P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Sync. Coupling
C55	270			SI270	D6-271		GP2K-271	5GA-T27	Sync. Coupling
C56	.05	600		P688-05	DF-503	PTE6S5		6TM-S5	Sync. Coupling
C57A	.002			P688-002		PTE6D2	GP2-333-202		Vert. Integrator Net.
B	.005			P688-005	*PC-100	PTE6D5	GP2-333-502	*101C1	Vert. Integrator Net.
C	.005			P688-005		PTE6D5	GP2-333-502		Vert. Osc. Grid Cap.
C58	.005	600		P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Vert. Discharge
C59	.05	600		P688-05	DF-503	PTE6S5		6TM-S5	Vert. Sweep Coupling
C60	.1	600		P688-1	DF-104	PTE6P1		6TM-P1	Vert. Sweep Coupling ¶
C61	.05	600		P688-05	DF-503	PTE6S5		6TM-S5	Horiz. Sync. Coupling
C62	1000			SI1000	D6-102	TM5D1	GP2L-102	5HK-D1	Horiz. Sync. Coupling
C63	1000			SI1000	D6-102	TM5D1	GP2L-102	5HK-D1	Horiz. AFC Filter
C64	.005	600		P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Horiz. AFC Filter
C65	.05	600		P688-05	DF-503	PTE6S5		6TM-S5	Fixed Trimmer
C66	4000	500		1464-004		1DR5D4			Horiz. MV Feedback
C67	330	500		1469-00035					Horiz. Sweep Coupling
C68	.002	600		P688-002	D6-202	PTE6D2	GP2-333-202	6TM-D2	Horiz. Discharge
C69	500	500		1469-0005		5R5T5		MS-55	Horiz. Output Screen
C70	.25	600		684-25		PTE6P25		6TM-P25	Horiz. Output Cathode
C71	.25	200		P488-25		PJ2P25		2TM-P25	Damper Filter
C72	.039	600		P688-04		PTE6S4		6TM-S4	Damper Filter *
C73	.1	600		P688-1		PTE6P1		6TM-P1	Horiz. Feedback
C74	.033	600		P688-033		PTE6S3		6TM-S3	Horiz. Sweep Coupling
C75	.25	600		684-24		PTE6P25		6TM-P25	HV Filter
C76	500	20000		HV20C	TV3-502	MM-C20T5			Line Filter
C77	.0047	600				PJ6D5		6TM-D47	Line Filter
C78	.0047	600				PJ6D5		6TM-D47	

* Not used in all models
† Some models use 82MMF in this application
¶ Some models use .068MFD in this application
♦ Items C57A, C57B, C57C, R75A, R75B, R75C are combined in one unit.
† Items C52A, C52B, C52C, R6lA, R6lB are combined oin one unit.
When replacing items separately, C52B and C52C should total 250MMF

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: Kaye-Halbert PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	2000Ω	½	M-116	QJ-264 *	RTV-293	SBB-637-S	Contrast Control - Panel
B	500KΩ	½					Volume Control - Rear
R2A	5000Ω	½	M-110	Q11-114	AM-19-S	AN-10	Vert. Linearity Control
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Attach to R2A per instructions
R3	2250Ω	4	M-112		RTV-319	SVS-926	Focus Control - Wire Wound
R4A	2Meg	½	M-106-A	Q11-139	AM-83-S	AN-75	Height Control
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Attach to R4A per instructions
R5A	2Meg	½	M-106-A	Q11-139	AM-83-S	AN-75	Vert.Hold Control
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Attach to R5A per instructions
R6	350Ω	4	M-130		RTV-94		Horiz. Size Control - Wire Wound
R7A	500KΩ	½	M-120	Q11-133	AM-58-S	AN-59	Brightness Control
B	Shaft		Not Req.	Not Req.	KSS-3	AK-4	Attach to R7A per instructions
R8	40KΩ	4	M-128		RTV-188		Horiz. Drive Control - Wire Wound - See Note

Note. Some Models use a 25KΩ Control in this application
* CONCENTRIKIT EQUIVALENT - KIT K-2, BASE ELEMENTS & SHAFTS B11-110 & P1-210 (Panel)
B13-133 & R1-300 (Rear) & SWITCH 76-1

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: Kaye-Halbert PART No.	IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ± 10% UNLESS OTHERWISE NOTED
R9	22KΩ	1			Antenna Coil Shunt
R10	47KΩ 20%	1		BTS-47K	RF Amp. Grid
R11	220KΩ 20%	1			RF Amp. Grid
R12	100Ω	1			RF Amp. Plate Decoupling
R13	220KΩ 20%	1			Voltage Divider
R14	4700Ω	1		BTS-4700	Mixer Grid
R15	220KΩ 20%	1			Mixer Grid
R16	15KΩ 20%	1			Mixer Plate
R17	10Ω 20%	1			Parasitic Suppressor
R18	10KΩ	1			Osc. Grid
R19	10KΩ	1			Osc. Plate
R20	4700Ω	2		BTB-4700	Decoupling
R21	10KΩ	1			1st. Video IF Amp. Grid
R22	120Ω	1		BTS-120	1st. Video IF Amp. Cathode
R23	47Ω	1			1st. Video IF Amp. Cathode
R24	18KΩ	1			2nd. Video IF Coil Shunt
R25	47Ω	1			2nd. Video IF Amp. Cathode
R26	47Ω	1			2nd. Video IF Amp. Cathode
R27	100Ω	1		BTS-100	Decoupling
R28	1500Ω	1		BTS-1500	Decoupling
R29	100Ω	1		BTS-100	3rd.Video IF Amp. Cathode
R30	10KΩ	1			4th. Video IF Coil Shunt
R31	1.5Meg	1		BTS-1.5Meg	DC Restorer Diode Load
R32	3900Ω	1		BTS-3900	Video Det. Diode Load
R33	39KΩ	1		BTS-39K	Voltage Divider
R34	10KΩ	1		BTS-10K	Video Amp. Screen
R35	3300Ω	1		BTS-3300	Video Amp. Plate
R36	39KΩ	1		BTS-39K	Voltage Divider
R37	39KΩ	1		BTS-39K	Voltage Divider
R38	22KΩ	1		BTS-22K	Video Peaking Coil Shunt
R39	470KΩ	1		BTS-470K	Video Output Grid
R40	330Ω	1		BTS-330	Video Output Cathode
R41	3300Ω	2		BTB-3300	Video Output Plate
R42	68KΩ	1		BTS-68K	Picture Tube Grid
R43	150KΩ	1		BTS-150K	Picture Tube Cathode
R44	10KΩ	1		BTS-10K	ACC Anode Load
R45	3300Ω	1		BTS-3300	AGC Network
R46	100KΩ	1		BTS-100K	AGC Network

RESISTORS (CONT.)

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: Kaye Halbert PART No.	IRC PART No.	IDENTIFICATION CODES
R47	22KΩ	½		BTS-22K	AGC Network
R48	47KΩ	½		BTS-47K	Keyed AGC Grid
R49	100Ω	½		BTS-100	1st. Sound IF Amp. Cathode
R50	1000Ω	½		BTS-1000	2nd. Sound IF Amp. Decoupling
R51	100Ω	½		BTS-100	2nd. Sound IF Amp. Cathode
R52	1000Ω	½		BTS-1000	2nd. Sound IF Amp. Decoupling
R53	270Ω	½		BTS-270	Balancing
R54	22KΩ	½		BTS-22K	De-emphasis
R55	10KΩ	½		BTS-10K	Ratio Det. Diode Load
R56	10KΩ	½		BTS-10K	Ratio Det. Diode Load
R57	1Meg	½		BTS-1Meg	AF Amp. Grid
R58	1800Ω	½		BTS-1800	AF Amp. Cathode
R59	39Ω	½			AF Amp. Cathode
R60	1Meg	½		BTS-1Meg	AF Amp. Screen
R61A	500KΩ	½	†		AF Amp. Plate
B	500KΩ	½			Output Grid
R62	1000Ω	1		BTA-1000	Output Cathode
R63	1000Ω	1		BTA-1000	Output Decoupling
R64	1000Ω	1		BTS-1000	Feedback Network
R65	470KΩ	½		BTS-470K	Fixed Trimmer
R66	4.7Meg	½		BTS-4.7Meg	Isolation
R67	18KΩ	½		BTS-18K	Sync. Seperator Grid
R68	100KΩ	½		BTS-100K	Sync. Seperator Plate
R69	27KΩ	½		BTS-27K	Sync. Seperator Plate
R70	10KΩ	½		BTS-10K	Sync. Seperator Screen
R71	470KΩ	½		BTS-470K	Voltage Divider
R72	3300Ω 5%	½		BTS-3300 5%	Sync. Phase Inverter Grid
R73	3900Ω 5%	½		BTS-3900 5%	Sync. Phase Inverter Cathode
R74	22KΩ	½		BTS-22K	Sync. Phase Inverter Plate
R75A	27KΩ	½		BTS-27K	Integrator Network
B	8200Ω	½	♦	BTS-8200	Integrator Network
C	8200Ω	½		BTS-8200	Integrator Network
R76	82KΩ	½		BTS-82K	Integrator Network
R77	1.2Meg	½		BTS-1.2Meg	Vert. Osc. Grid
R78	560KΩ	½		BTS-560K	Vert. Osc. Plate - See Note 1
R79	150KΩ	½		BTS-150K	Vert. Osc. Transformer Shunt
R80	1Meg	½		BTS-1Meg	Voltage Divider
R81	8200Ω	½		BTS-8200	Vert. Peaking
R82	1Meg	½		BTS-1Meg	Vert. Output Grid
R83	1500Ω	½		BTS-1500	Vert. Output Cathode
R84	100KΩ 5%	½		BTS-100K 5%	Horiz. Phase Det. Diode Load
R85	100KΩ 5%	½		BTS-100K 5%	Horiz. Phase Det. Diode Load
R86	4.7Meg	½		BTS-4.7Meg	Horiz. Phase Det. Diode Load
R87	470KΩ	½		BTS-470K	Horiz. AFC Filter
R88	15Ω	1			Horiz. Feedback
R89	1500Ω	½		BTS-1500	Horiz. MV Cathode
R90	120KΩ 5%	½		BTS-120K 5%	Horiz. MV Grid
R91	5600Ω	½		BTS-5600	Horiz. MV Plate
R92	150KΩ	½		BTS-150K	Horiz. MV Plate
R93	6800Ω	½		BTS-6800	Horiz. Peaking
R94	470KΩ	½		BTS-470K	Horiz. Output Grid
R95	220Ω	2		BW-2-220	Horiz. Output Cathode - See Note 2
R96	8200Ω	2		BTB-8200	Horiz. Output Screen
R97	47Ω	½			Parasitic Suppressor
R98	1200Ω	1		BTA-1200	Size Control Shunt
R99	39KΩ	½		BTS-39K	Horiz. Drive Control Shunt - See Note 3
R100	2200Ω	1		BTA-2200	Decoupling
R101	3.3Ω	½			HV Rectifier Filament - Wire Wound
R102	560KΩ	1			HV Filter
R103	560KΩ	1			HV Filter
R104	2500Ω	20		2D-2500	Voltage Divider - Wire Wound
R105	1200Ω	½		BTS-1200	Focus Coil Shunt
R106	270Ω	2			Focus Coil Shunt
R107	220KΩ	½		BTS-220K	Line Isolation

Note 1. Some Models use a 470KΩ Resistor in this application
Note 2. Some Models use a 180Ω Resistor in this application
Note 3. Not used in all Models
† Items R61A, R61B, C52A, C52B, C52C are combined in one unit
♦ Items R75A, R75B, R75C, C57A, C57B, C57C are combined in one unit

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	RATING: SEC. 4	REPLACEMENT DATA: Kaye-Halbert PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.
T1	117VAC @ 2A	780VCT @ .230A	@ 4A	6.3VAC @ 1.2A	6.3VAC @ 8.2A	C-102	P-8170	P-3189 ①	TP-392 ①

① Drill new mtg. holes

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	REPLACEMENT DATA: Kaye-Halbert PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T2	250Ω	1.4KΩ	C3102	A-8125	A-3000 ②	TB0-1 ③	Vert. Osc. Trans.
T3	420Ω Tap @ 20Ω	37Ω Tap @ 3.7Ω, 12Ω, 33Ω	.C2121				Horiz. Output Trans.
		SEC. 2					
		0Ω					
T4	17000Ω Tap @4.7Ω		C2306	A-8141	A-3039		Vert. Output Trans.
T5A	18Ω			DY-9	MDF-70		Horiz. Deflection Coils
T5B	45Ω						Vert. Deflection Coils
T6	1700Ω						Focus Coil

② Drill one new mtg. hole
③ Mount on top of Chassis.

KAYE-HALBERT MODEL 114DX (Ch. DX253)

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		Kaye-Halbert PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T7	5.2KΩ	3.4Ω	590Ω	.6Ω	C2002	A-3877	A-2930	R0-9 ④	④ Drill one new mtg hole

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ↶)	Kaye-Halbert PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
L1	.230A	40Ω	1.5 Hy.	C-1002	C-2326 ①	C-2991 ①	TR-3300①	① Drill one new mtg. hole

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	Kaye-Halbert PART No.	MERIT PART No.	
L2	Ant. Coil	0Ω				
L3	Fil. Choke	0Ω				
L4	RF Choke	0Ω				
L5	RF, Mixer Grid & Osc.	0Ω				
L6	Fil. Choke	0Ω				
L7	RF Choke	.3Ω				
L8	1st. Video IF	.8Ω				
L9	Coupling Choke	.8Ω				
L10	2nd. Video IF	.2Ω	.2Ω			Includes Trap
L11	3rd. Video IF	.2Ω	.2Ω			Includes Trap
L12	Sound take off	0Ω	.1Ω			
L13	4th. Video IF	.2Ω	.2Ω			Includes Trap
L14	Peaking Coil	8.8Ω			TV-183	180 Microhenries, wound on 39KΩ resistor
L15	Peaking Coil	11.1Ω			TV-185	250 Microhenries
L16	4.5MC Trap	1.1Ω			TV-151	
L17	Peaking Coil	11.1Ω			TV-185	250 Microhenries
L18	Peaking Coil	6.8Ω			TV-182	120 Microhenries, wound on 22KΩ resistor
L19	Peaking Coil	5.9Ω			TV-181	93 Microhenries
L20	Sound IF	.1Ω	.1Ω		TV-104	
L21	Ratio Det.	.2Ω	0Ω		TV-111	Tap ⓐ .1Ω
L22	Horiz. Osc.	94Ω			TV-163	
L23	Width Coil	9Ω				
L24	Horiz. Lin.	5.8Ω				Tap ⓐ 1.7Ω

FUSES

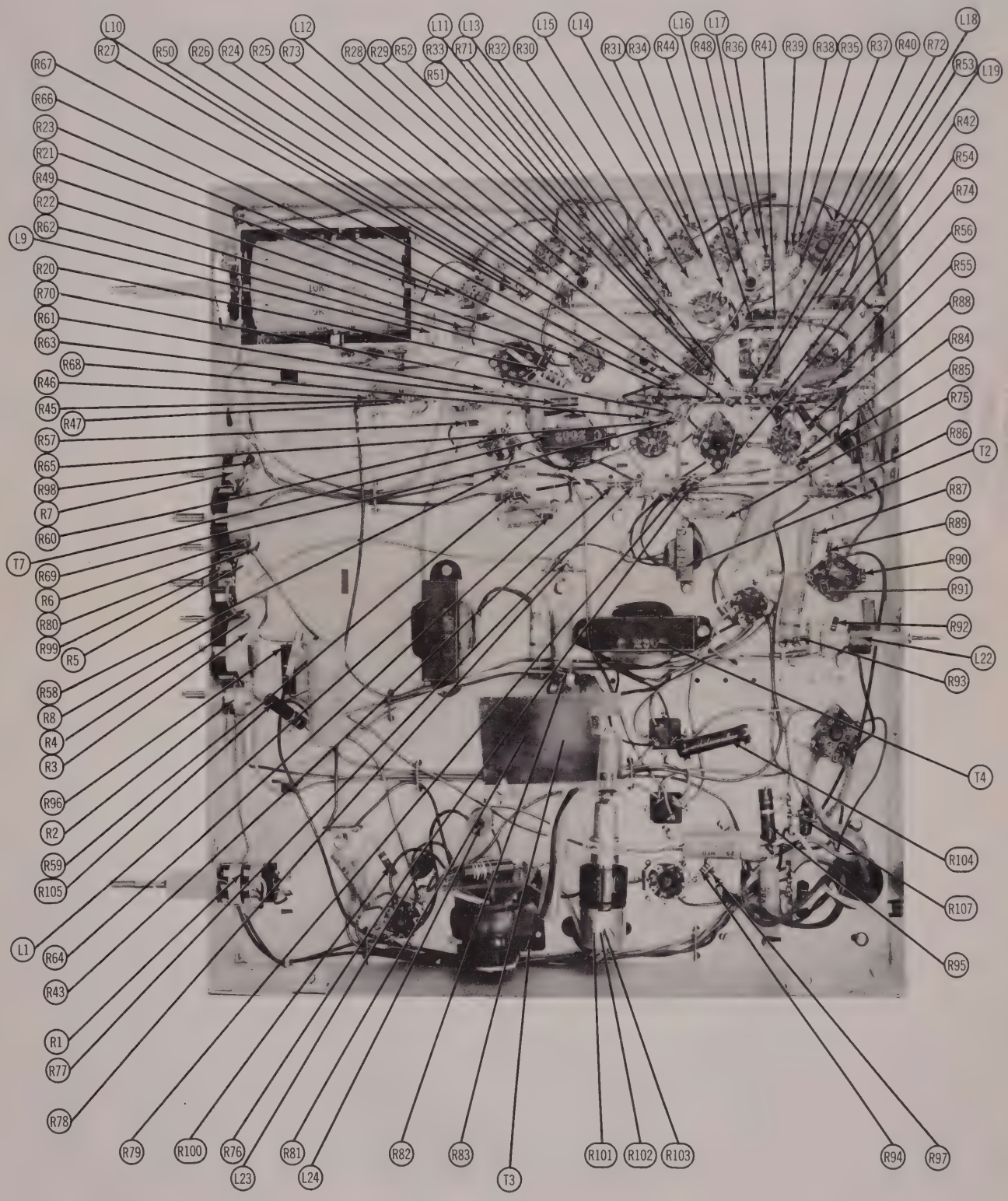
ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			Kaye-Halbert PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG Slo-Blo Pigtail	1/4A. 125V.			315.250		MDV 1/4	

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					Kaye-Halbert PART No.		
M2	Bayonet	6-8	.25	Blue			Type #44

MISCELLANEOUS

ITEM No.	PART NAME	Kaye-Halbert PART No.	NOTES
M3	RF Tuner		TV - Phono
M4	Switch		
M5	Ion Trap		



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

PHOTOFACT* Folder

MAJESTIC
MODELS 20FP88, 20FP89

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MODEL 20FP88

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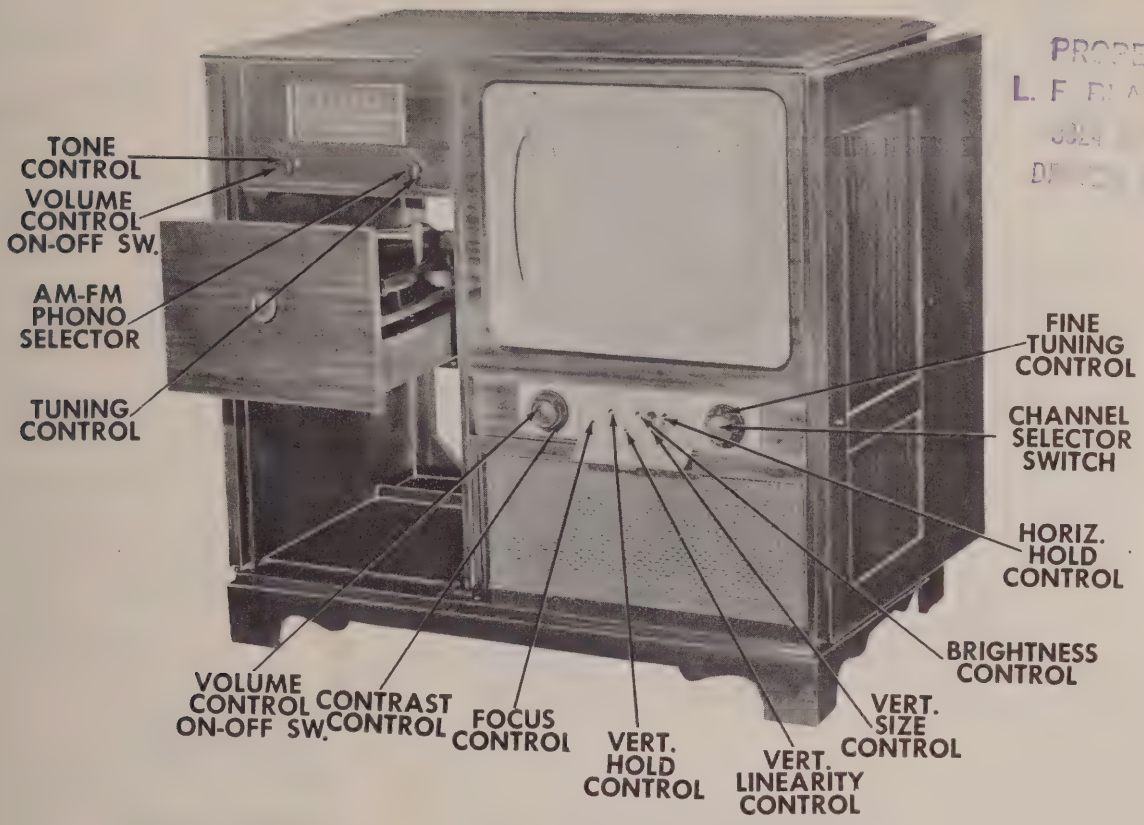

MAJESTIC
MODELS 20FP88, 20FP89

Majestic 20FP88

TRADE NAME	Majestic Model 20FP88, 20FP89
MANUFACTURER	Majestic Radio & Tel. Div. of Wilcox Gay Corp., 70 Washington St., Brooklyn, N. Y.
TYPE SET	TV-AM-FM-Phono Combination
TUBES	Twenty Seven

POWER SUPPLY 110-120 Volts AC-60 Cycle RATING 1.65 Amp. @ 117 Volts AC(TV) .75 Amp. @ 117 Volts AC (Radio)
TUNING RANGE-(TV) Channels 2 thru 13, (FM) 88-108MC, (AM) 540-1650KC

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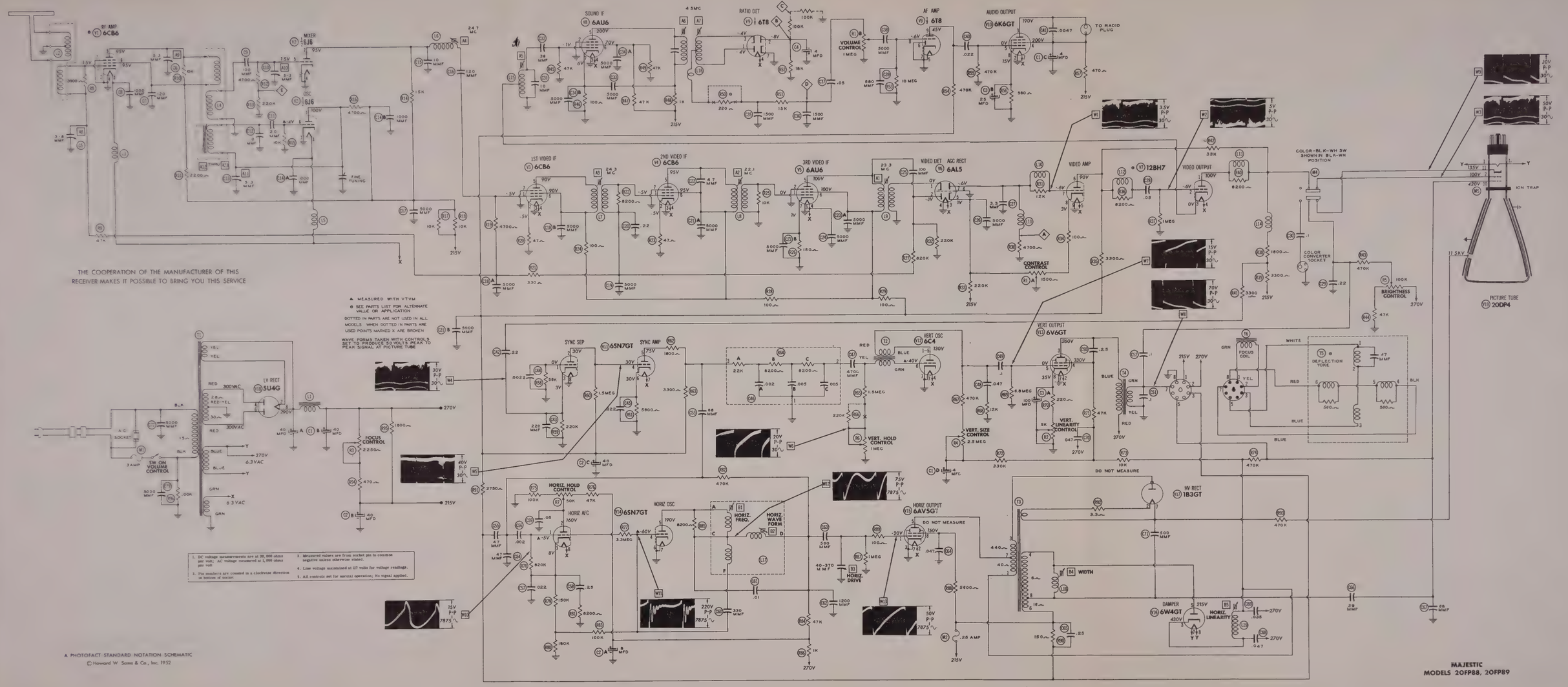
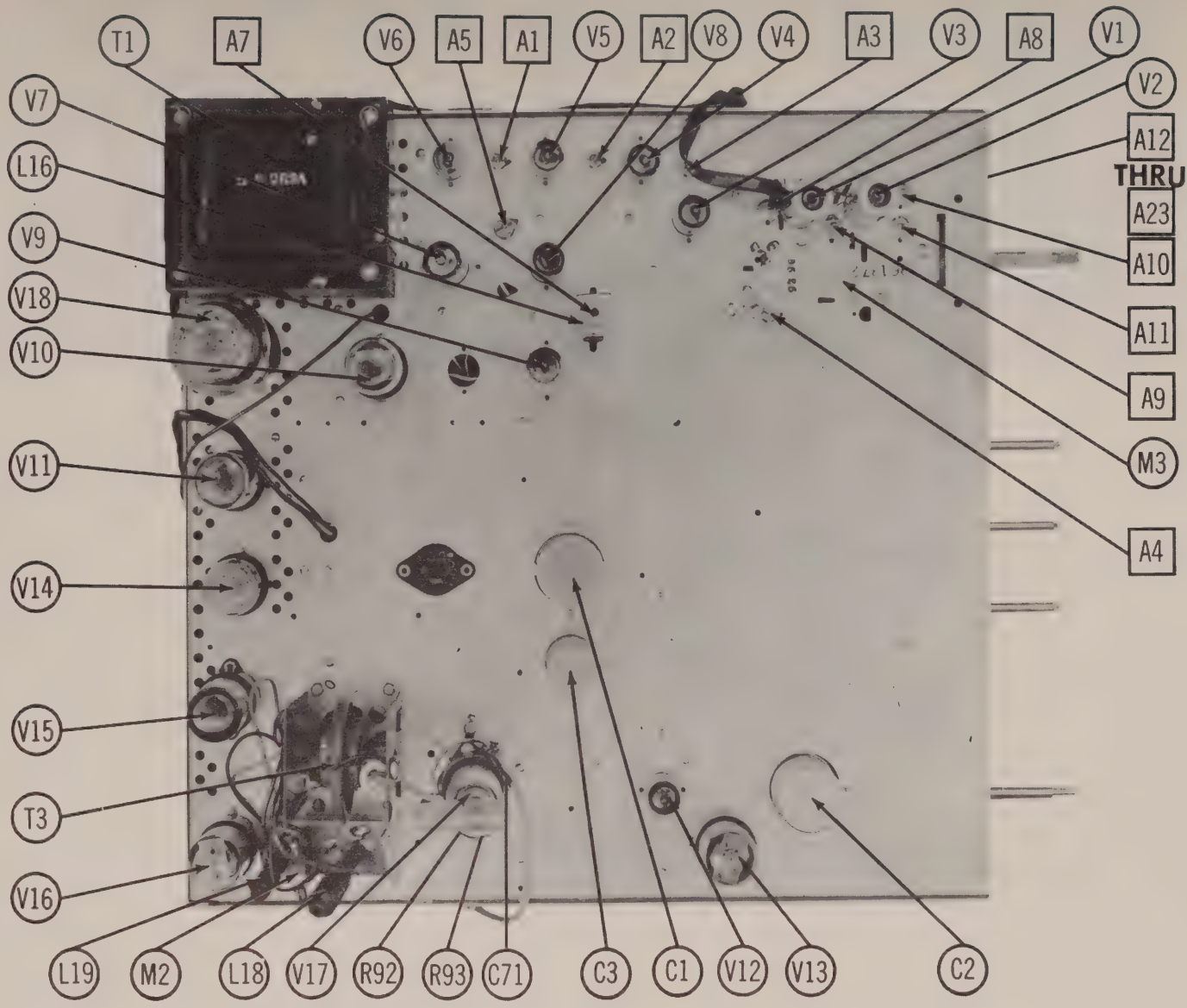
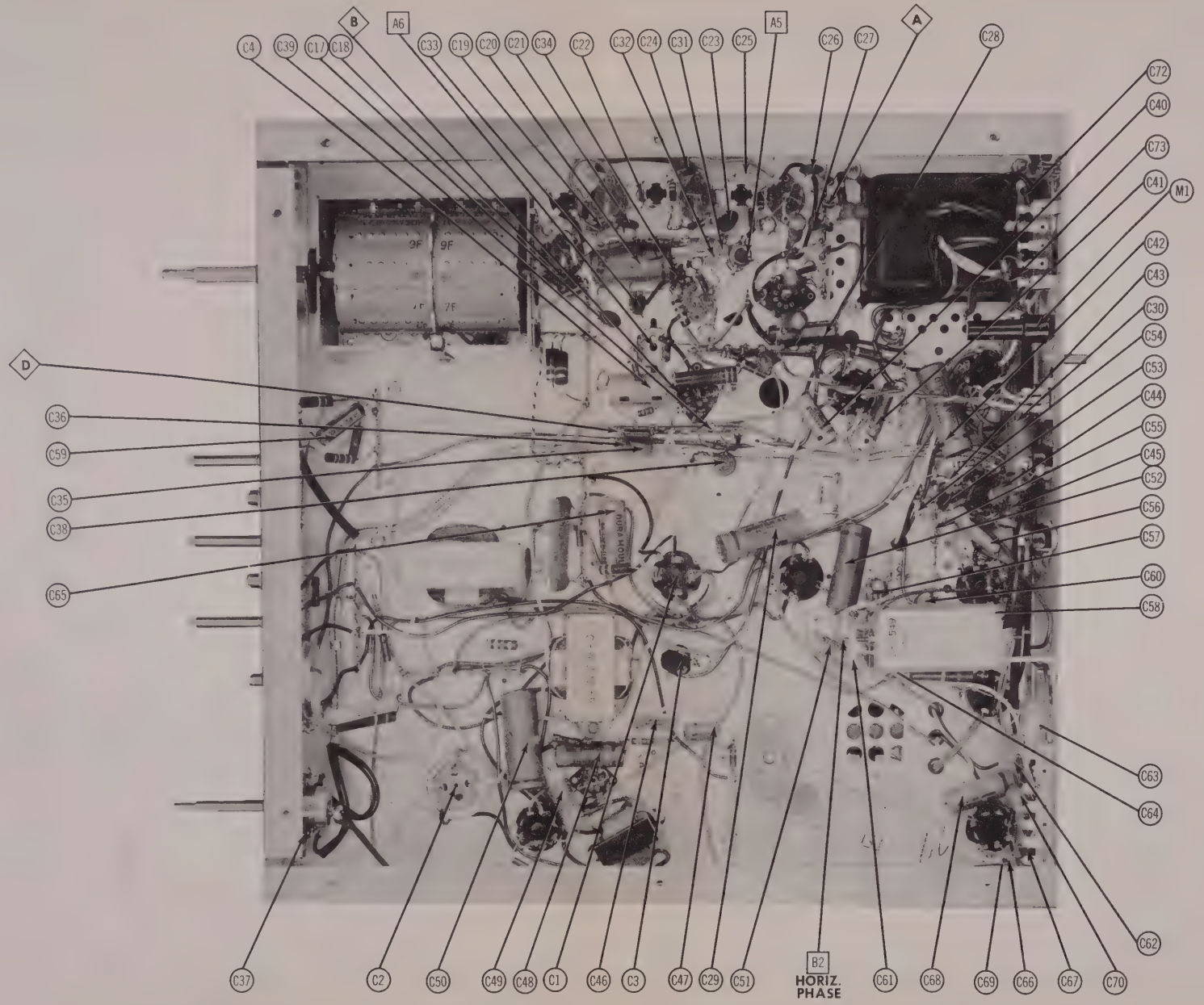

RF AMP V1 6CB6
MIXER V2 6J6
OSC V3 6J6
SOUND IF V8 6AU6
RATIO DET V9 6T8
AF AMP V9 6T8
AUDIO OUTPUT V10 6K6GT
TO RADIO PLUG
VOLUME CONTROL 1 MEG
1ST VIDEO IF V3 6CB6
2ND VIDEO IF V4 6CB6
3RD VIDEO IF V5 6AU6
VIDEO DET AGC RECT V6 6AL5
VIDEO AMP
* V7 12BH7
VIDEO OUTPUT
CONTRAST CONTROL
COLOR-BLK-WH SW SHOWN IN BLK-WH POSITION
ION TRAP
PICTURE TUBE V15 20DP4
COLOR CONVERTER SOCKET
BRIGHTNESS CONTROL
FOCUS COIL
DEFLECTION YOKE
SYNC SEP V11 6SN7GT
SYNC AMP
VERT OSC V12 6C4
VERT OUTPUT V13 6V6GT
VERT. SIZE CONTROL
VERT. LINEARITY CONTROL
VERT. HOLD CONTROL 1 MEG
DO NOT MEASURE
HORIZ. HOLD CONTROL
HORIZ AFC
HORIZ OSC V14 6SN7GT
HORIZ. FREQ.
HORIZ. WAVE FORM
HORIZ. DRIVE
HORIZ OUTPUT V15 6AV5GT
HV RECT V17 1B3GT
DAMPER V16 6W4GT
WIDTH
HORIZ. LINEARITY
LV RECT V18 5U4G
300VAC
6.3VAC
FOCUS CONTROL 2250
FINE TUNING
SW ON VOLUME CONTROL
3 AMP
A.C. SOCKET
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
▲ MEASURED WITH VTVM
⊕ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DOTTED IN PARTS ARE NOT USED IN ALL MODELS. WHEN DOTTED IN PARTS ARE USED POINTS MARKED X ARE BROKEN
WAVE FORMS TAKEN WITH CONTROLS SET TO PRODUCE 30 VOLTS PEAK TO PEAK SIGNAL AT PICTURE TUBE
1. DC voltage measurements are at 20,000 ohms per volt; AC voltage measured at 1,000 ohms per volt.
2. Pin numbers are counted in a clockwise direction as bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation; No signal applied.
A PHOTOFACT STANDARD NOTATION SCHEMATIC
© Howard W. Sams & Co., Inc. 1952
MAJESTIC
MODELS 20FP88, 20FP89

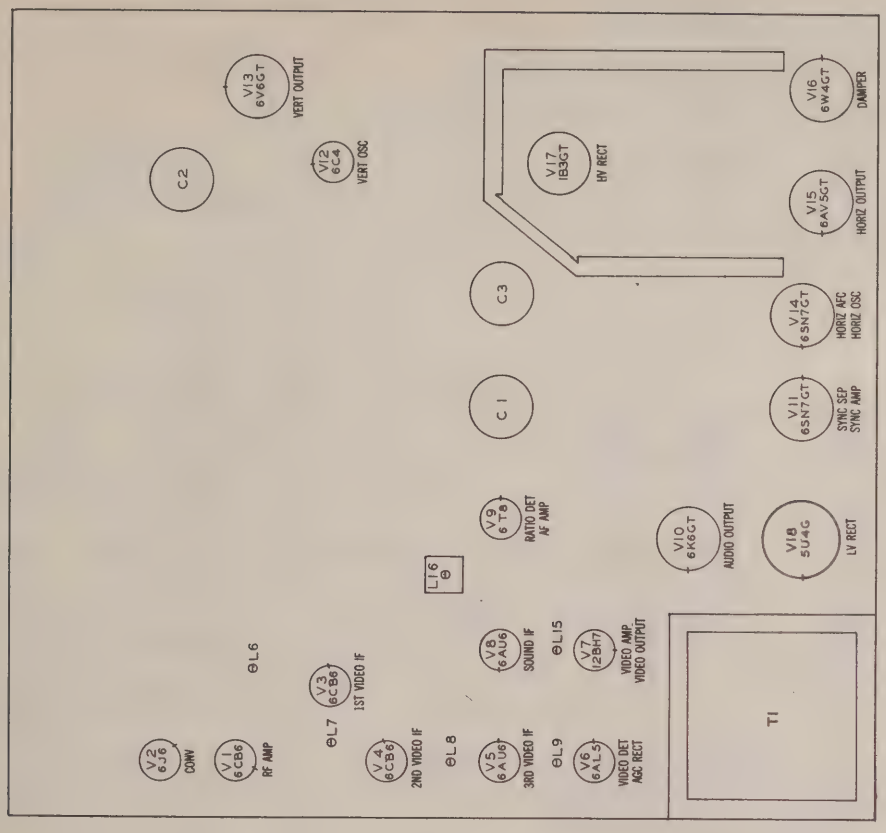
MAJESTIC
MODELS 20FP88, 20FP89



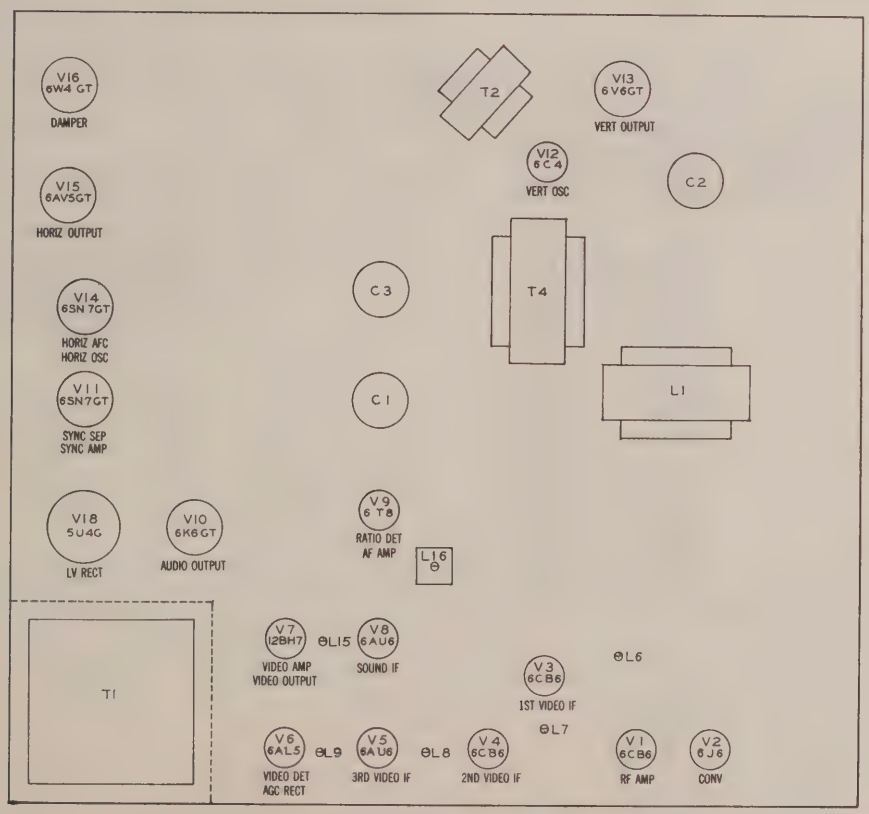
CHASSIS TOP VIEW



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION



TOP VIEW



BOTTOM VIEW

TUBE PLACEMENT CHART

TV ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The high voltage lead should be securely taped and kept away from the chassis.
Do not remove the horizontal oscillator tube to disable the high voltage.

VIDEO IF ALIGNMENT

Remove the converter tube (V2) from its socket and replace with a 6J6 which has had pin 1 removed. This will disable the local oscillator and reduce the possibility of erroneous indications.
Connect the negative lead of a 3 volt battery to the ungrounded side of C18A. Connect the positive lead to chassis. Set the contrast control fully clockwise.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1	Direct	High side to an ungrounded tube shield floating over dummy converter tube (V2). Low side to chassis.	23.3MC (unmod.)	Any	DC probe to Point A. Common to chassis.	A1	Adjust for maximum deflection. Attenuate generator to maintain 1.5 Volts reading.
2	"	"	22.1MC	"	"	A2	Adjust for maximum deflection
3.	"	"	24.3MC	"	"	A3	"
4.	"	"	24.7MC	"	"	A4	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	SWEEP GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
5.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis	24MC (10MC Swp)	20.25MC 22 MC 24.75MC	Any	Vert. amp. to point A. Low side to chassis.		Check for response curve as per fig. 1. If necessary retouch A1, through A4 for proper response.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (±1%) resistors in series from point B to chassis. The junction of these two resistors is alignment point C as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
6.	.0015MFD	High side to Point A. Low side to chassis.	4.5MC (unmod.)	Any	DC probe to Point B. Common to chassis.	A5, A6	Adjust for maximum deflection.
7.	"	"	"	"	DC probe to Point D. Common to Point C.	A7	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60% modulation and 450KC sweep. Use 120% sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	.0015MFD	High side to Point A. Low side to chassis.	4.5MC	4.5MC	Any	Vert. amp. to Point B. Low side to chassis.	A5, A6	Disconnect stabilizor capacitor C4. Adjust for maximum amplitude and symmetry as per Fig. 2.
7.	"	"	"	"	"	Vert. amp. to Point D. Low side to chassis.	A7	Reconnect capacitor C4. Adjust A7 so that 4.5MC occurs at the center of crossover lines as per Fig. 3. SLIGHTLY retouch A6 for maximum amplitude and straightness of crossover lines.

RF AND MIXER ALIGNMENT (STANDARD COIL TUNER)

Remove bias battery used in Video IF Alignment and connect a short across C18A.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	207MC (10MC Swp)	205.25MC 209.75MC	12	Vert. Amp. thru 10KΩ to point E. Low side to chassis.	A8, A9, A10	Adjust for response curve similar to fig. 4 with markers at not less than 70%.
9.	"	"	213MC (10MC Swp)	211.25MC 215.75MC	13	"		Check all channels for proper marker placement. If markers fall below 70% on any channel make slight compromise adjustment of A8, A9, and A10 with channel selector set for that channel. Recheck all channels to see that they have not been seriously affected.
			201MC (10MC Swp)	199.25MC 203.75MC	11			
			195MC (10MC Swp)	193.25MC 197.75MC	10			
			189MC (10MC Swp)	187.25MC 191.75MC	9			
			183MC (10MC Swp)	181.25MC 185.75MC	8			
			177MC (10MC Swp)	175.25MC 179.75MC	7			
			85MC (10MC Swp)	83.25MC 87.75MC	6			
			79MC (10MC Swp)	77.25MC 81.75MC	5			
			69MC (10MC Swp)	67.25MC 71.75MC	4			
			63MC (10MC Swp)	61.25MC 65.75MC	3			
			57MC (10MC Swp)	55.25MC 59.75MC	2			

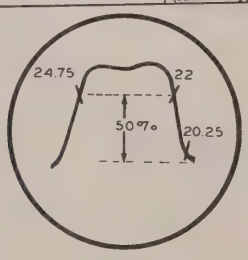


FIG. 1

FIG. 2

TV ALIGNMENT INSTRUCTIONS (CONT.)

OSCILLATOR ALIGNMENT (STANDARD COIL TUNER)

Complete oscillator alignment may not be necessary.
If the oscillator seems to be off frequency approximately the same amount for a majority of the channels, it may be possible to correct them in one step using All. It should be noted that this is an all channel oscillator circuit adjustment and should not be adjusted for any individual channel. If adjustment of All will not bring all channels well within the range of the fine tuning control it will be necessary to adjust the channel strip adjustment for each channel that is off frequency. The channel adjustment screws are reached through a hole just to the right of the channel switch shaft. The correct adjustment screw is accessible through this hole as the channel selector switch is turned to each channel.
Remove the dummy converter tube and replace the original 6J6 in its socket.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	SWEEP GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC swp.)	211.25MC 215.75MC	13	Vert. amp. to Point A Low side to chassis.	A12	Adjust to place sound marker as shown in Fig. 5. The video marker should be at 50% response.
			207MC (10MC swp.)	205.25MC 209.75MC	12		A13	
			201MC (10MC swp.)	199.25MC 203.75MC	11		A14	
			195MC (10MC swp.)	193.25MC 197.75MC	10		A15	
			189MC (10MC swp.)	187.25MC 191.75MC	9		A16	
			183MC (10MC swp.)	181.25MC 185.75MC	8		A17	
			177MC (10MC swp.)	175.25MC 179.75MC	7		A18	
			85MC (10MC swp.)	83.25MC 87.75MC	6		A19	
			79MC (10MC swp.)	77.25MC 81.75MC	5		A20	
			69MC (10MC swp.)	67.25MC 71.75MC	4		A21	
			63MC (10MC swp.)	61.25MC 65.75MC	3		A22	
			57MC (10MC swp.)	55.25MC 59.75MC	2		A23	

OSCILLATOR ALIGNMENT (SARKES TARZIAN TUNER)

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
11.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213 MC (10MC Swp)	211.25MC 215.75MC	13	Vert. amp. to point A Low side to chassis.	A24	Adjust to place sound marker as shown in fig. 5. The video marker should be at 50% response.
12.	"	"	207MC (10MC Swp)	205.25MC 209.75MC	12	"		Check all high band channel to see if markers can be properly placed well within the range of the fine tuning control. If not, a compromise adjustment of A24 may be necessary.
			201MC (10MC Swp)	199.25MC 203.75MC	11			
			195MC (10MC Swp)	193.25MC 197.75MC	10			
			189MC (10MC Swp)	187.25MC 191.75MC	9			
			183MC (10MC Swp)	181.25MC 185.75MC	8			
			177MC (10MC Swp)	175.25MC 179.75MC	7			
13.	"	"	85MC (10MC swp.)	83.25MC 87.75MC	6	"	A25	Adjust to place sound marker as shown in fig. 5. The video marker should be at 50% response.
14.	"	"	79MC (10MC swp.)	77.25MC 81.75MC	5	"		Check all low band channels to see if markers can be properly placed well within the range of the fine tuning control. If not, a compromise adjustment of A25 may be necessary.
			69MC (10MC swp.)	67.26MC 71.75MC	4			
			63MC (10MC swp.)	61.25MC 65.75MC	3			
			57MC (10 MC swp.)	55.25MC 59.75MC	2			

THE RF SECTION OF THIS TUNER HAS BEEN PROPERLY ALIGNED AT THE FACTORY AND IS VERY STABLE. ALIGNMENT SHOULD NORMALLY NOT BE REQUIRED IN THE FIELD.

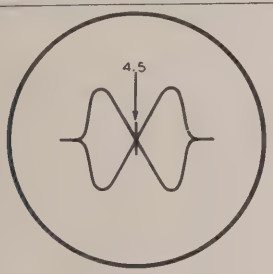


FIG. 3

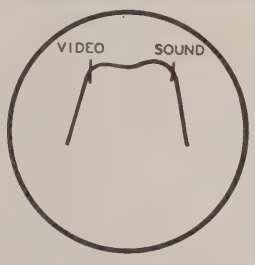


FIG. 4

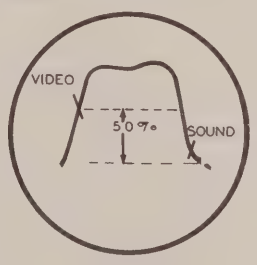
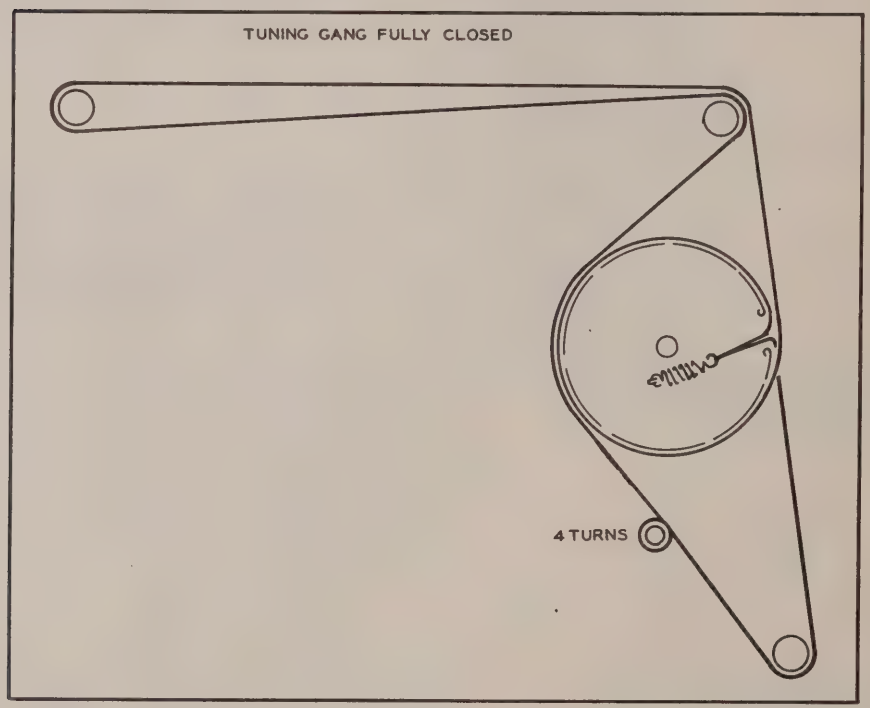


FIG. 5

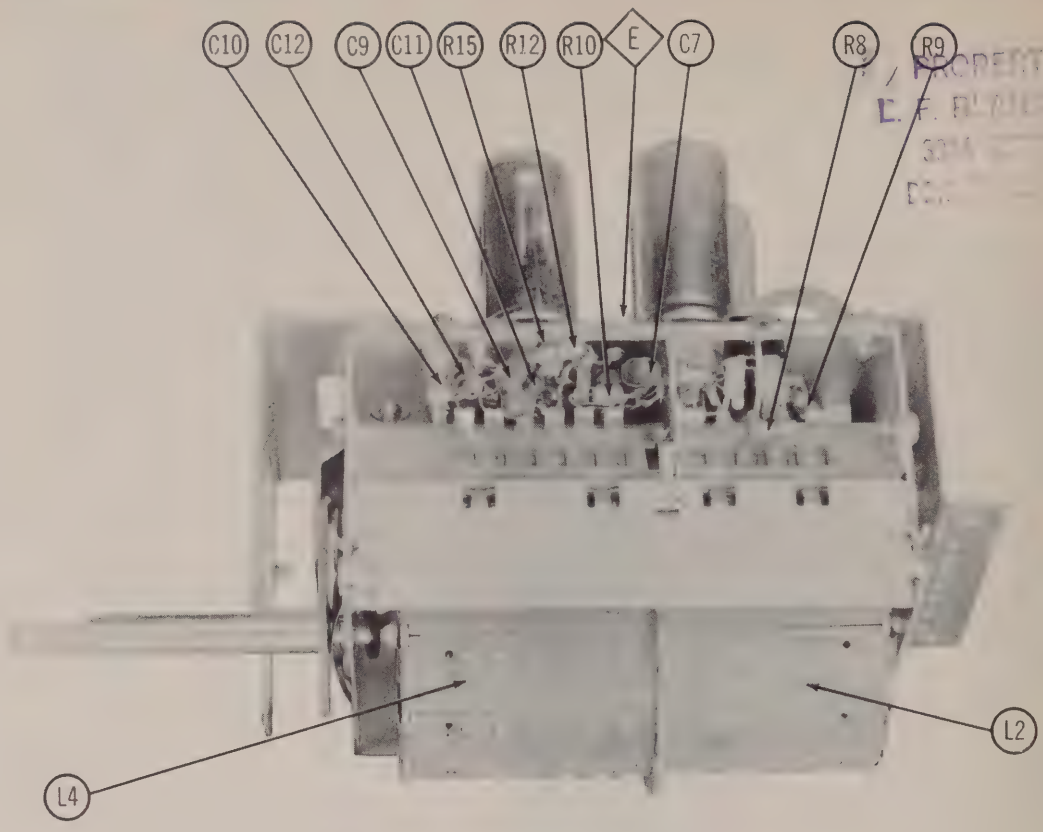
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6CB6	1.1Meg	0Ω	.1Ω	0Ω	7.5KΩ	7.5KΩ	0Ω		
V 2	6J6	10KΩ	20KΩ	.1Ω	0Ω	220KΩ	10KΩ	0Ω		
V 3	6CB6	1Meg	47Ω	0Ω	.1Ω	†3.5KΩ	†3.5KΩ	0Ω		
V 4	6CB6	1Meg	47Ω	0Ω	.1Ω	†3.4KΩ	†3.4KΩ	0Ω		
V 5	6AU6	.3Ω	0Ω	0Ω	.1Ω	†3.3KΩ	†3.3KΩ	150Ω		
V 6	6AL5	.3Ω	220KΩ	.1Ω	0Ω	1.1KΩ	0Ω	4.7KΩ		
V 7	12BH7	†5.4KΩ	1Meg	1.2Ω	.1Ω	.1Ω	†6.5KΩ	4.7KΩ	500Ω	0Ω
V 8	6AU6	47KΩ	0Ω	0Ω	.1Ω	†1.3KΩ	25KΩ	100Ω		
V 9	6T8	INF	18KΩ	INF	.1Ω	0Ω	0Ω	0Ω	10Meg	†470KΩ
V 10	6K6GT	INF	0Ω	†1.3KΩ	†800Ω	470KΩ	†470KΩ	.1Ω	560Ω	
V 11	6SN7GT	56KΩ	†1.5Meg	220KΩ	†1.5Meg	†8.1KΩ	5.6KΩ	.1Ω	0Ω	
V 12	6C4	#1.1Meg	0Ω	0Ω	.1Ω	#1.1Meg	1.9Meg	0Ω		
V 13	6V6GT	INF	.1Ω	†780Ω	#57KΩ	6.8Meg	2.9KΩ	0Ω	3.1KΩ	
V 14	6SN7GT	1.1Meg	†40KΩ	330KΩ	280KΩ	†48KΩ	0Ω	0Ω	.1Ω	
V 15	6AV5GT	1Meg	.1Ω	0Ω	INF	#61Ω	INF	0Ω	†5.9KΩ	
V 16	6W4GT	†300Ω	INF	850KΩ	INF	†300Ω	■0Ω	■0Ω	■.1Ω	
V 17	1B3GT	PINS 1 THRU 8 HAVE INF RESISTANCE								TOP CAP #501Ω
V 18	5U4G	INF	20KΩ	INF	28Ω	†72Ω	30Ω	†72Ω	20KΩ	
V 19	20DP4	■0Ω	†5.4KΩ	PIN 10 #470KΩ	PIN 11 †480KΩ	PIN 12 ■.1Ω				

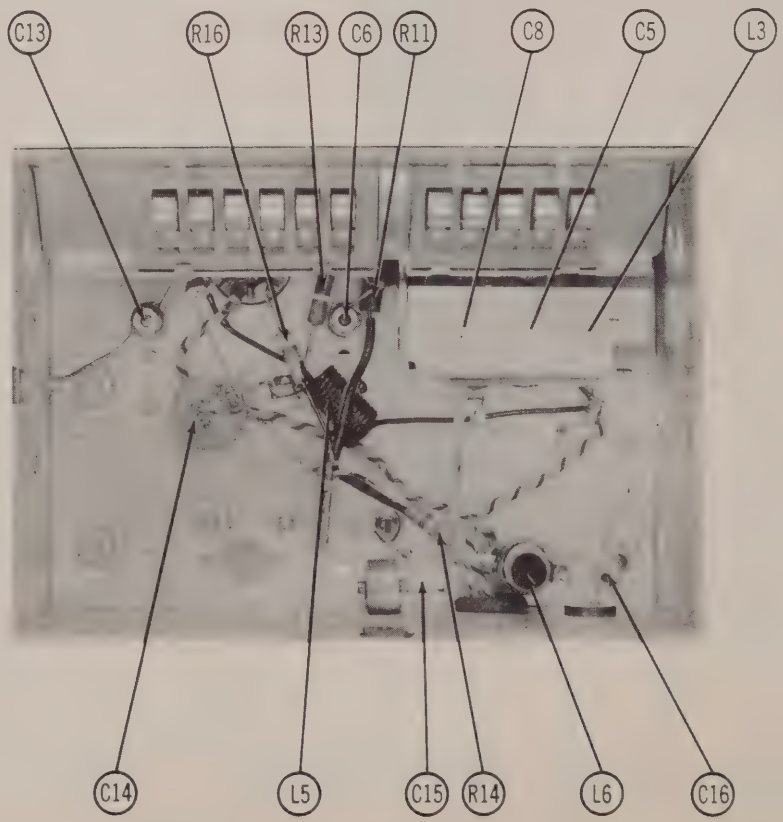
ALL CONTROLS SET FOR NORMAL OPERATION, NO SIGNAL APPLIED
† MEASURED FROM PIN 8 OF V18
# MEASURED FROM PIN 3 OF V16
■ MEASURED FROM 270 VDC LINE



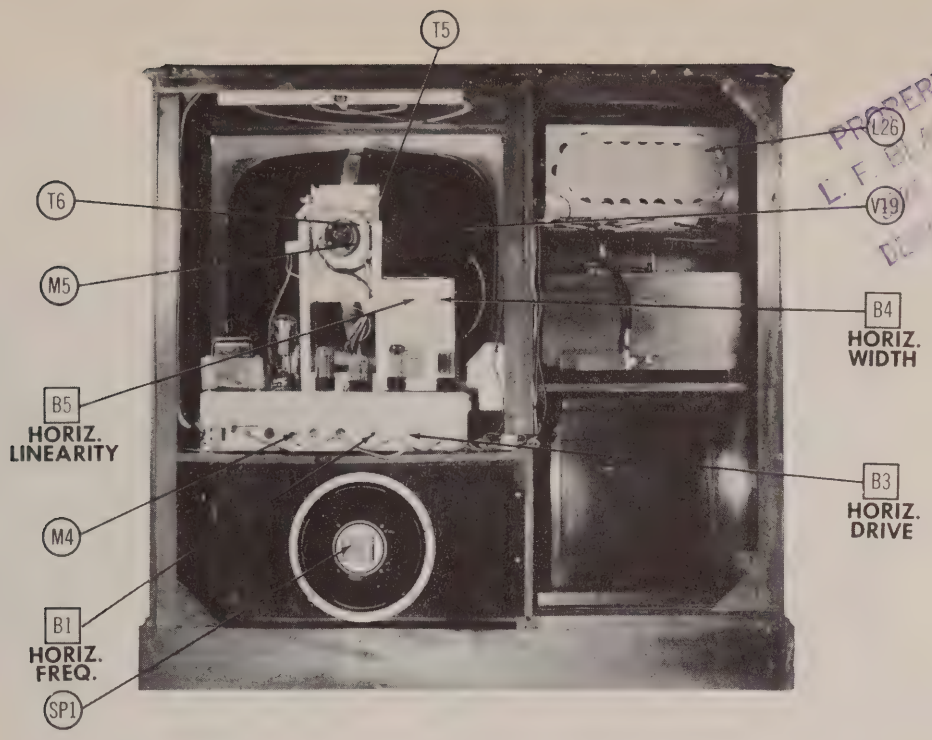
DIAL CORD STRINGING



RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW



PROPERTY OF
L. F.

CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

HORIZONTAL OSCILLATOR ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern. Turn the contrast control to its mid position.
Turn the horizontal hold control fully counter clockwise.
If the picture is out of sync. adjust the horizontal frequency slug, B1, until picture synchronizes.
Momentarily interrupt the signal by switching to another channel, then back. The picture should just fall out of sync.
If it does not, turn B1 slightly clockwise and again interrupt the signal. Continue this procedure until picture just falls out of sync. only when signal is interrupted. Rotate the horizontal hold control clockwise until picture falls into sync.
The picture should remain in sync. throughout most of the range of the horizontal hold control. If picture does not hold sync. it may be necessary to adjust the horizontal waveform slug, B2. Connect the vertical amplifier of an oscilloscope through 10KΩ to terminal "C" of L17. Connect the low side to chassis. If necessary, adjust B2 to obtain waveform as in Fig. 8. During adjustment of B2 keep picture in sync. by adjusting B1.
Adjust the horizontal drive trimmer, B3, counter clockwise until compression of the center of the picture occurs, then clockwise until the compression just disappears.
Adjust the horizontal size slug, B4, until the picture is slightly wider than enough to fill the picture mask.
Adjust the horizontal linearity slug, B5, until the picture is symmetrical from left to right.

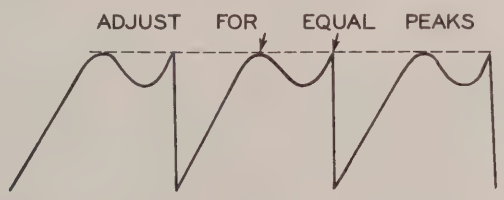


FIG. 8

DISASSEMBLY INSTRUCTIONS

TV

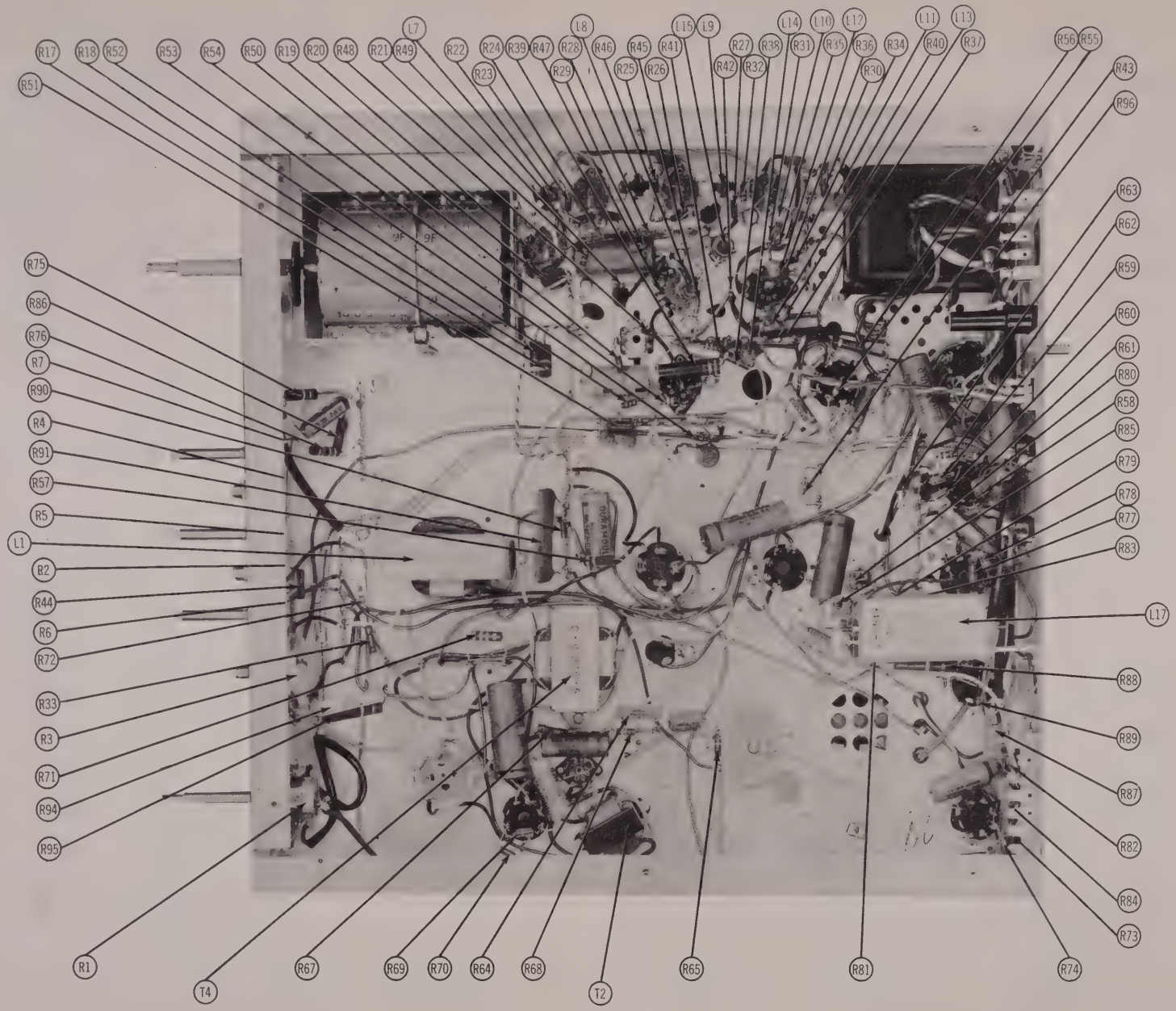
1. Remove 4 push on type control knobs from front panel.
2. Remove 3 metal screws and remove rear cover
3. Disconnect radio power plug audio output plug, and built in antenna.
4. Remove TV AC input from clamp.
5. Remove 2 metal screws and remove AC interlock from rear of cabinet.
6. Remove 8 chassis bolts. Remove chassis.

NOTE: FOR PICTURE TUBE REMOVAL, IT IS NECESSARY TO REMOVE CHASSIS AS OUTLINED ABOVE.

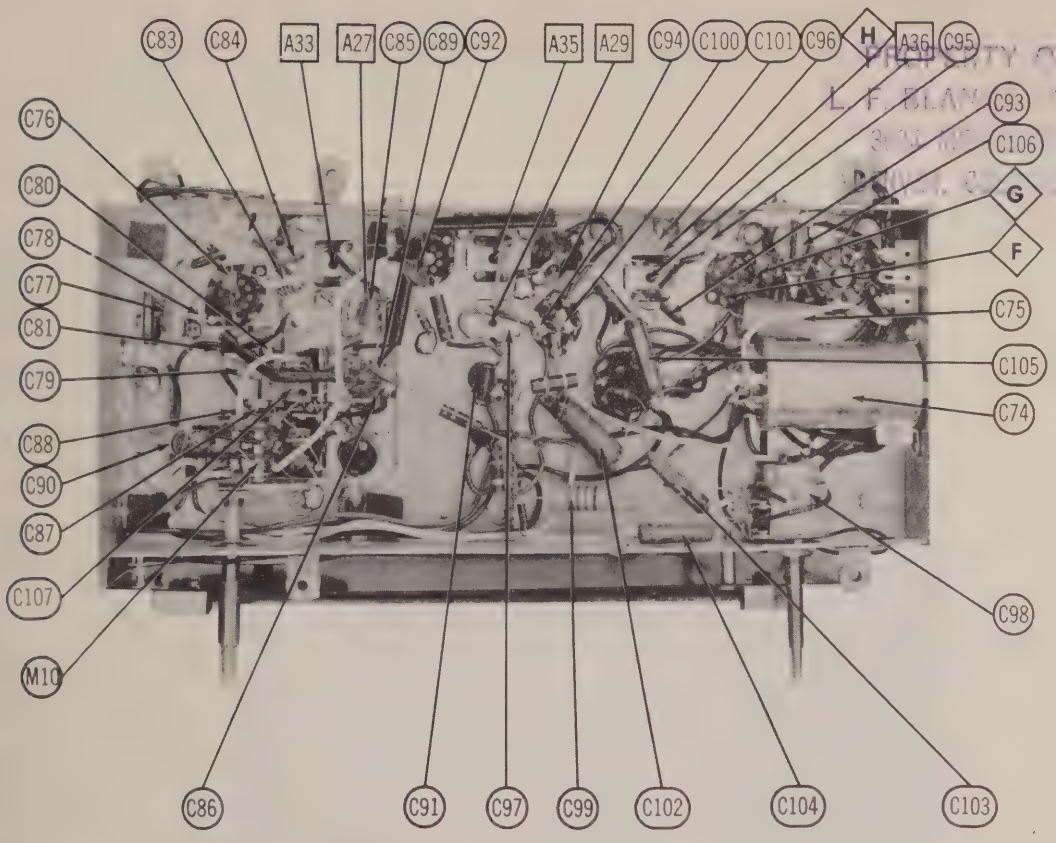
RADIO

1. Remove 4 push-on type control knobs from front panel.
2. Remove 9 wood screws and remove rear cover.
3. Disconnect phono AC plug, phono audio plug, speaker leads and FM Antenna.
4. Remove 4 nuts holding Speaker. Remove Speaker.
5. Remove 4 chassis bolts. Remove Chassis.

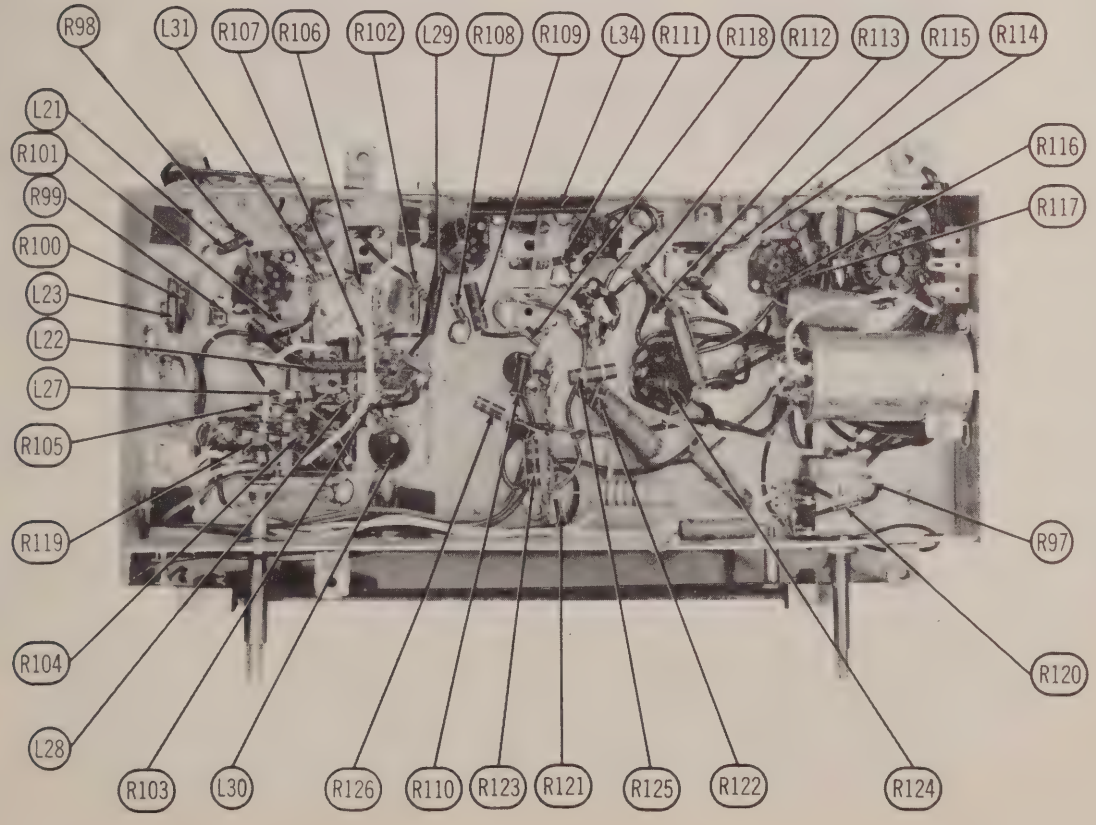
PROPERTY OF



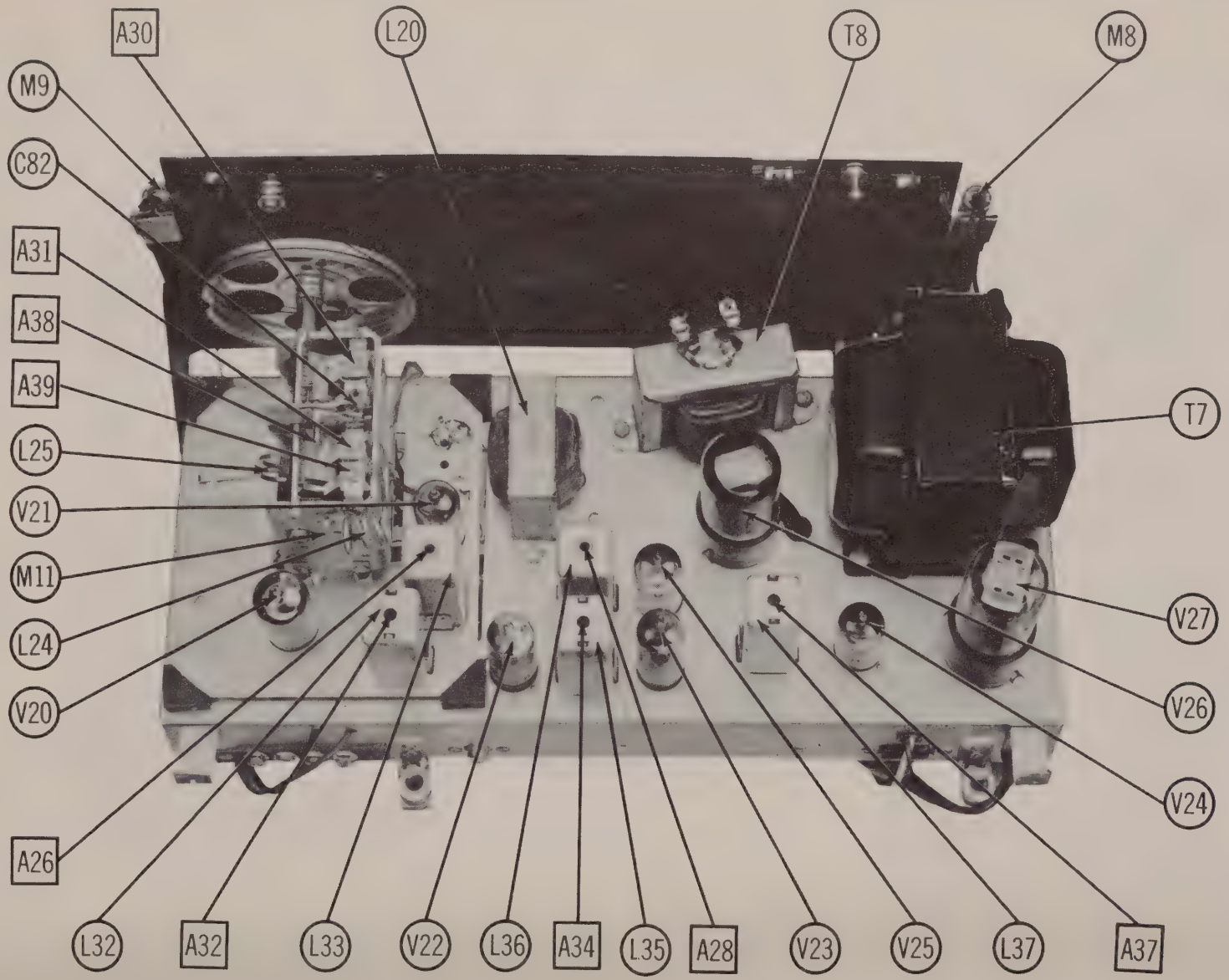
CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION



RADIO CHASSIS-BOTTOM VIEW



RADIO CHASSIS-BOTTOM VIEW



RADIO CHASSIS-TOP VIEW

TV PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: MAJESTIC PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1A	RF Amplifier	6CB6	6CB6	7CH	
B	RF Amplifier	6BC5	6BC5	7BD	
C	RF Amplifier	6AG5	6AG5	7BD	
V2	Converter	6J6	6J6	7BF	
V3	1st. Video IF Amp.	6CB6	6CB6	7CH	
V4	2nd. Video IF Amp.	6CB6	6CB6	7CH	
V5	3rd. Video IF Amp.	6AU6	6AU6	7BK	
V6	Video Detector AGC Rectifier	6AL5	6AL5	6BT	
V7A	Video Amplifier Video Output	12BH7	12BH7	9A	
B	Video Amplifier - Video Output	12AU7	12AU7	9A	
V8	Sound IF Amp.	6AU6	6AU6	7BK	
V9	Ratio Detector AF Amplifier	6T8	6T8	9E	
V10	Audio Output	6K6GT	6K6GT	7S	
V11	Sync. Seperator - Syne. Amplifier	6SN7GT	6SN7GT	8BD	
V12	Vert. Oscillator	6C4	6C4	6BG	
V13	Vert. Output "	6V6GT	6V6GT	7AC	
V14	Horiz. AFC-Horiz. Oscillator	6SN7GT	6SN7GT	8BD	
V15	Horiz. Output	6AV5GT	6AV5GT	6CK	
V16	Damper	6W4GT	6W4GT	4CG	
V17	HV Rectifier	1B3GT	1B3GT	3C	
V18	LV Rectifier	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: MAJESTIC PART No.	REPLACEMENT DATA: SYLVANIA PART No.	REPLACEMENT DATA:	RTMA BASE TYPE	NOTES
V19	20DP4	20DP4		12D	
		20CP4		12D	3/8" Shorter
		20CP4A		12D	3/8" Shorter. Make circuit changes and add outer coating grounding spring.
		20DP4A		12D	Make circuit changes and add outer coating grounding spring.
		20HP4		12C	Make circuit changes
		20HP4A		12C	Make circuit changes and add outer coating grounding spring.

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MAJESTIC PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	450	C-5.435-3	E4D415		UPT420		TVL-3785	▲ Filter †
B	40	450						TVA-1702	■ Filter †
C	4	450							▲ Audio Output Dec. ¶
D	4	450							Decoupling ¶
C2A	8	450	C-5.435-4	AFH3-43		UPT44145		TVL-3785	▲ Horiz. Osc. Dec. ‡
B	40	450							■ Decoupling ‡
C	40	450							▲ Decoupling ‡
C3A	100	50	C-5.435-2	AFH3-12		UPT205		TVL-1320	■ Vert. Output Cathode †
B	25	50						TVA-1303	▲ Audio Output Cathode ‡
C4	4	50	C-5.430-1	PRS150/4		BR550		TVA-1303	Stabilizing Cap.
C5	3-8				829-10				Variable Trimmer
C6	.5-3				829-3				Variable Trimmer
C7	120			SII20	D6-121	TM5T12	GP2K-121	5GA-T12	RF Amp. Decoupling
C8	1000			SII000	D6-102	TM5D1	GP2L-102	5HK-D1	RF Amp. Fil. Bypass
C9	100			SII00	D6-101	TM5T1	GP1K-101	5GA-T1	RF Coupling
C10	.5-3				829-3				Variable Trimmer
C11	20			SI20NP0	TCZ-20		NP0K-200		Osc. Grid Cap.
C12	10			SII0N750	TCN-10		N750K-100	5TCU-Q1	Fixed Trimmer
C13	.5-3				829-3				Variable Trimmer
C14A	1000		BPD-2X001	BPD-2X001	DD-2-102	TM5DD1	822-001	5HK-2D1	Conv. Fil. Bypass
B	1000								RF Bypass
C15	10			SII0NP0	TCZ-10		NP0K-100	5TCC-Q1	Fixed Trimmer
C16	120	500							IF Coupling
C17	5000		B-4.115-1	BPD-005	DD-502	TM5D5	811-005	5HK-D5	RF Bypass
C18A	5000		B-4.125-1	BPD-005	DD-2-502	TM5D5	811-005	5HK-2D47	AGC Filter
B	5000			BPD-005		TM5D5	811-005		1st. Video IF Dec.
C19	5000		B-4.115-1	BPD-005	DD-502	TM5D5	811-005	5HK-D5	AGC Filter
C20	.22	400	D-3.105-23	P488-22		PTE4P22		4TM-P22	AGC Filter
C21A	5000		B-4.125-1	BPD-005	DD-2-502	TM5D5	811-005	5HK-2D47	2nd. Video IF Dec.
B	5000			BPD-005		TM5D5	811-005		RF Bypass
C22	4.7			SI5NP0	TCZ-4.7		NP0K-4R7		Fixed Trimmer
C23A	5000		B-4.125-1	BPD-005	DD-2-502	TM5D5	811-005	5HK-2D47	3rd. Video IF Dec.
B	5000			BPD-005		TM5D5	811-005		3rd. Video IF Cathode
C24	5000		B-4.115-1	BPD-005	DD-502	TM5D5	811-005	5HK-D5	3rd. Video IF Fil.
C25	100			SII00	D6-101	TM5T1	GP1K-101	5GA-T1	IF Coupling
C26	5000		B-4.115-1	BPD-005	DD-502	TM5D5	811-005	5HK-D5	RF Bypass
C27	3.3			SI3.3NP0	TCZ-3.3		NP0K-3R3		Video Det. Filter
C28	.05	400	D-3.105-19	P488-05	DF-503	PTE4S5		4TM-S5	Video Coupling
C29	.22	400	D-3.105-23	P488-22		PTE4P22		4TM-P22	Picture Tube Cathode
C30	.1	600	D-3.105-36	P688-1	DF-104	PTE6P1		6TM-P1	Video Coupling
C31	10		C-4.109-16	SII0NP0	TCZ-10		NP0K-100	5TCC-Q1	Fixed Trimmer
C32	39	500	D-4.104-21	1469-00004		5R5Q4		MS-44	Sound IF Coupling
C33	5000		B-4.115-1	BPD-005	DD-502	TM5D5	811-005	5HK-D5	Sound IF Plate Dec.
C34A	5000		B-4.125-1	BPD-005	DD-2-502	TM5D5	811-005	5HK-2D47	Sound IF Screen
B	5000			BPD-005		TM5D5	811-005		Sound IF Cathode
C35	1500		D-4.108-12	BPD-0015	DD-152	TM5D15	801-0015	5HK-D15	Diode Load Cap.
C36	1500		D-4.108-12	BPD-0015	DD-152	TM5D15	801-0015	5HK-D15	De-Emphasis
C37	.05	400	D-3.105-19	P488-05	DF-503	PTE4S5		4TM-S5	Audio Coupling
C38	5000		B-4.115-1	BPD-005	DD-502	TM5D5	811-005	5HK-D5	Audio Coupling
C39	680		C-4.109-5	SI680	D6-681		GP2K-681	5GA-T68	AF Amp. Grid Filter
C40	.022	400	D-3.105-17	P488-022		PTE4S22		4TM-S22	Audio Coupling
C41	.0047	600	B-4.115-1	P688-0047	D6-472	PTE6D47	GP2-333-472	6TM-D47	Audio Output Plate
C42	.22	400	D-3.105-23	P488-22		PTE4P22		4TM-P22	Sync. Coupling

TV PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (CONT.)

ITEM No.	RATING CAP.	RATING VOLT	REPLACEMENT DATA MAJESTIC PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C43	220		C-4.109-11	81220	D6-221		GP2K-221	5GA-T22	Sync. Sep. Cathode
C44	.0022	400	D-3.105-13	P688-0022	D6-222	PTE6D22	GP2-333-222	6TM-D22	Sync. Sep. Grid
C45	.022	400	D-3.105-17	P488-022		PTE4S22		4TM-S22	Sync. Amp. Cathode
C46A	.002			P688-002		PTE6D2	GP2-333-202		Vert. Integrator Net.
B	.005		⌀10.101	P688-005	⌀PC-100	PTE6D5	GP2-333-503	⌀101C1	Vert. Integrator Net.
C	.005			P688-005		PTE6D5	GP2-333-503		Vert. Integrator Net.
C47	4700	500	D-4.105-24	1464-005		LDR5D5		MS-25	Vert. Osc. Grid Cap.
C48	.047	600	D-3.105-34	P688-047		PTE6S47		6TM-S47	Vert. Discharge
C49	.1	400	D-3.105-21	P488-1	DF-104	PTE4P1		4TM-P1	Vert. Sweep Coupling
C50	.25	600	D-3.100-32	684-25		PTE6P25		6TM-P25	Vert. Output Plate
C51	.1	400	D-3.105-21	P488-1	DF-104	PTE4P1		4TM-P1	Fixed Trimmer
C52	.1	600	D-3.105-36	P688-1	DF-104	PTE6P1		6TM-P1	Vert. Sweep Coupling
C53	68	500	D-4.104-93	1469-00007		5R5Q7		MS-47	Horiz. Sync. Coupling
C54	47		C-4.109-14		TCZ-47		NP0L-470	5TCC-Q47	Voltage Divider
C55	47		D-4.109-12	8147	D6-470	5R5Q5	GP1K-470	5GA-Q47	Horiz. Feedback
C56	.002	600	D-3.105-36	P688-002	D6-202	PTE6D2	GP2-333-202	6TM-D2	Horiz. Sync. Coupling
C57	.022	400	D-3.105-17	P488-022		PTE4S22		4TM-S22	Horiz. AFC Filter
C58	.25	200	D-3.100-30	P488-25		PJ2P25		2TM-P25	Horiz. AFC Filter
C59	.05	600	D-3.109-19	P688-05	DF-503	PTE6S5		6TM-S5	Horiz. AFC Plate
C60	330	500	D-4.104-59	1469-00035					Horiz. Osc. Grid Cap.
C61	.01	600	D-3.106-1	P688-01		PTE6S1		6TM-S1	Fixed Trimmer
C62	1200	500	D-4.105-9						Horiz. Discharge
C63	580	500	D-4.104-70						Horiz. Sweep Coupling
C64	.047	600	B-3.105-34	P688-047	DF-503	PTE6S47		6TM-S47	Horiz. Output Screen
C65	.25	200	D-3.100-30	P488-25		PJ2P25		2TM-P25	Horiz. Sweep Coupling
C66	35	2000	B-4.129-2						Blanking Net.
C67	68	2000	B-4.124-4						Blanking Net.
C68	.047	600	D-3.105-34	P688-047		PTE6S47		6TM-S47	Damper Filter
C69	.035	600	D-3.100-46						Damper Filter
C70	.047	600	D-3.105-34	P688-047		PTE6S47		6TM-S47	RF Bypass
C71	500	20000	B-4.128	HV20C	TV3-502	MM-C30T5			HV Filter
C72	5000		B-4.115-1	BPD-005	DD-502	TM5D5	811-005	5HK-D5	Line Filter
C73	5000		B-4.115-1	BPD-005	DD-502	TM5D5	811-005	5HK-D5	Line Filter

⌀ Items C46A, C46B, C46C, R64A, R64B, R64C are combined in one unit.
† Some models combine C1A, C1B, C3A in one unit (Part #5.435-1)
‡ Some models combine C2A, C2B, C2C, C3B in one unit (Part #5.435-2)
¶ C1C and C1D are single units in some models (Part #5.418)

CONTROLS

ITEM No	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA MAJESTIC PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	1500Ω	½	C-8.230-1	QJ-9 *	RTV-233		Contrast Control - Panel
B	1Meg	½					Volume Control & SW - Rear
R2	5000Ω	2	C-8.206-6	W-5000	43-5000	VK-135	Vert. Linearity Control - Wire Wound
R3	2250Ω	4	C-8.221		RTV-319		Focus Control - Wire Wound
R4A	2.5Meg	½	C-8.219-5	Q11-239	AG-84-S	AN-83	Vert. Size Control
B	Shaft		Not Req.	RQ	FKS-1/4	AK-1	Attach to R4A per instructions
R5A	100KΩ	½	C-8.229-9	Q11-128	AG-49-S	B-40	Brightness Control
B	Shaft		Not Req.	Not Req.	RS-2	Not Req.	Attach to R5A per instructions
R6A	1Meg	½	C-8.229-8	Q13-137	AG-63-Z	B-70	Vert. Hold Control
B	Shaft		Not Req.	Not Req.	RS-2	Not Req.	Attach to R6A per instructions
R7A	50KΩ	½	C-8.229-7	Q13-123	AG-46-Z	B-32	Horiz. Hold Control
B	Shaft		Not Req.	Not Req.	RS-2	Not Req.	Attach to R7A per instructions

* CONCENTRIKIT EQUIVALENT - KIT K-2, BASE ELEMENTS & SHAFTS B11-109 & P1-126 (Panel), B13-137 & R1-210 (Rear) & Switch 76-1

RESISTORS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA MAJESTIC PART No.	IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ± 10% UNLESS OTHERWISE NOTED
R8	3900Ω	½		BTS-3900	Antenna Coil Shunt
R9	47KΩ 20%	½		BTS-47K	RF Amp. Grid
R10	10KΩ	½			RF Coil Shunt
R11	2200Ω 20%	½		BTS-2200	RF Amp. Decoupling
R12	4700Ω	½		BTS-4700	Mixer Grid
R13	220KΩ 20%	½			Mixer Grid
R14	15KΩ 20%	½		BTS-15K	Mixer Plate
R15	10KΩ	½			Osc. Grid
R16	4700Ω	½		BTS-4700	Osc. Plate
R17	10KΩ	2	D-7.103-128		Decoupling
R18	10KΩ	2	D-7.103-128		Decoupling
R19	4700Ω	½	D-7.101-44	BTS-4700	1st. Video IF Amp. Grid
R20	47Ω 20%	½	D-7.101-240		1st. Video IF Amp. Cathode
R21	330Ω	½	D-7.101-227	BTS-330	AGC Network
R22	8200Ω	½	D-7.101-55		2nd. Video IF Coil Shunt
R23	47Ω 20%	½	D-7.101-240		2nd. Video IF Amp. Cathode
R24	100Ω 20%	½	D-7.101.226	BTS-100	Decoupling
R25	10KΩ	½	D-7.101-58		3rd. Video IF Coil Shunt
R26	150Ω 20%	½	D-7.101-204	BTS-150	3rd. Video IF Amp. Cathode
R27	820KΩ	½	D-7.101-138	BTS-820K	AGC Network
R28	100Ω 20%	½	D-7.101-226	BTS-100	Decoupling
R29	100Ω 20%	½	D-7.101-226	BTS-100	De coupling
R30	4700Ω	½	D-7.101-44	BTS-4700	Video Det. Diode Load
R31	12KΩ	½	D-7.101-62	BTS-12K	Video Peaking Coil Shunt
R32	220KΩ	½	D-7.101-114	BTS-220K	AGC Diode Load
R33	220KΩ	½	D-7.101-114	BTS-220K	Voltage Divider
R34	100Ω 20%	½	D-7.101-226	BTS-100	Video Amp. Cathode
R35	3300Ω	½	D-7.101-37	BTS-3300	Video Amp. Plate
R36	8200Ω	½	D-7.101-55	BTS-8200	Video Peaking Coil Shunt
R37	1Meg 20%	½	D-7.101-142	BTS-1Meg	Video Output Grid
R38	1800Ω	1	D-7.102-34	BTA-1800	Video Output Plate
R39	3300Ω	2	D-7.103-108	BTB-3300	Video Output Plate
R40	8200Ω	½	D-7.101-55	BTS-8200	Video Peaking Coil Shunt
R41	3300Ω 20%	½	D-7.101-38	BTS-3300	Isolation
R42	33KΩ 20%	½	D-7.101-80	BTS-33K	Picture Tube Grid
R43	470KΩ 20%	½	D-7.101-129	BTS-470K	Picture Tube Cathode
R44	47KΩ	½	D-7.101-87	BTS-47K	Voltage Divider
R45	47KΩ 20%	½	D-7.101-87	BTS-47K	Sound IF Amp. Grid
R46	100Ω 20%	½	D-7.101-226	BTS-100	Sound IF Amp. Cathode
R47	47KΩ	1	D-7.101-87		Sound IF Amp. Screen
R48	1000Ω 20%	½	D-7.101-17	BTS-1000	Sound IF Amp. Plate Decoupling
R49	47KΩ 20%	½	D-7.101-87	BTS-47K	Voltage Divider
R50	220Ω 20%	½	D-7.101-234	BTS-220	Balancing - See Note 1

RESISTORS (CONT.)

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA MAJESTIC PART No.	IRC PART No.	IDENTIFICATION CODES
R51	15KΩ	½	D-7.101-66	BTS-15K	De-emphasis
R52	18KΩ	½	D-7.101-69	BTS-18K	Ratio Det. Diode Load
R53	10Meg 20%	½	D-7.101-192	BTS-10Meg	AF Amp. Grid
R54	470KΩ 20%	½	D-7.101-129	BTS-470K	AF Amp. Plate
R55	470KΩ 20%	½	D-7.101-129	BTS-470K	Output Grid
R56	560Ω	1	D-7.102-13	BTA-560	Output Cathode
R57	470Ω 20%	1	D-7.102-10	BTA-470	Output Decoupling
R58	56KΩ	½	D-7.101-90	BTS-56K	Sync. Seperator Grid
R59	220KΩ	½	D-7.101-114	BTS-220K	Sync. Seperator Cathode
R60	1.5Meg	½	D-7.101-148	BTS-1.5Meg	Sync. Seperator Plate
R61	5800Ω	½	D-7.101-48	BTS-5800	Sync. Amp. Cathode
R62	1800Ω	½	D-7.101-27	BTS-1800	Sync. Amp. Plate
R63	3300Ω 20%	½	D-7.101-38	BTS-3300	Sync. Amp. Plate
R64A	22KΩ	½		BTS-22K	Integrator Network
B	6200Ω	½	⌀10.101	BTS-8200	Integrator Network
C	8200Ω	½		BTS-8200	Integrator Network
R65	1.5Meg	½	D-7.101-148	BTS-1.5Meg	Vert. Osc. Grid
R66	220KΩ	½	D-7.101-115	BTS-220K	Vert. Osc. Grid
R67	470KΩ	½	D-7.101-129	BTS-470K	Vert. Osc. Plate
R68	12KΩ	½	D-7.101-62	BTS-12K	Vert. Peaking
R69	6.8Meg 20%	½	D-7.101-185	BTS-6.8Meg	Vert. Output Grid
R70	220Ω 20%	½	D-7.101-234	BTS-220	Vert. Output Cathode
R71	47KΩ	1	D-7.102-94	BTA-47K	Vert. Output Screen
R72	330KΩ 20%	½	D-7.101-122	BTS-330K	Decoupling
R73	10KΩ	½	D-7.101-59	BTS-10K	Decoupling
R74	470KΩ	½	D-7.101-129	BTS-470K	ACC Anode Load
R75	100KΩ	1	D-7.102-108	BTA-100K	Voltage Divider
R76	47KΩ	1	D-7.102-94	BTA-47K	Voltage Divider
R77	3.3Meg	½	D-7.101-171	BTS-3.3Meg	Voltage Divider
R78	820KΩ	½	D-7.101-138	BTS-820K	Horiz. AFC Grid
R79	150KΩ	½	D-7.101-107	BTS-150K	Horiz. AFC Cathode
R80	180KΩ	½	D-7.101-111	BTS-180K	Horiz. AFC Cathode
R81	8200Ω	½	D-7.101-55	BTS-8200	Horiz. AFC Filter
R82	470KΩ	½	D-7.101-129	BTS-470K	Horiz. AFC Feedback
R83	100KΩ 5%	½	D-7.101-99	BTS-100K 5%	Horiz. Osc. Grid
R84	47KΩ	1	D-7.102-94	BTA-47K	Horiz. Osc. Plate
R85	8200Ω	½	D-7.101-55	BTS-8200	Horiz. Osc. Transformer Shunt
R86	1000Ω 20%	1	D-7.102-24	BTA-1000	Horiz. Osc. Decoupling
R87	1Meg 20%	½	D-7.101-142	BTS-1Meg	Horiz. Output Grid
R88	5600Ω	2	D-7.103-118	BTB-5600	Horiz. Output Screen
R89	100Ω 20%	½	D-7.101-226		Parasitic Suppressor
R90	150Ω	½	D-7.101-204	BTS-150	Horiz. Feedback
R91	2750Ω	10	B-6.211-4	1 3/4A-3000	Decoupling - Wire Wound
R92	3.3Ω	½	C-6.212-1		HV Rectifier Filament - Wire Wound
R93	470KΩ	1	D-7.102-137		HV Filter
R94	470Ω	7	C-6.215-5	1 3/4A-450	Focus Control Shunt - Wire Wound
R95	18000Ω	2	D-7.103-97	BTB-1800	Focus Control Shunt -
R96	100KΩ 5%	½	D-7.101-100	BTS-100K 5%	Line Isolation

Note 1. Not used in all Models
⌀ Items R64A, R64B, R64C, C46A, C46B, C46C are combined in one unit

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	RATING SEC. 3	REPLACEMENT DATA MAJESTIC PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC ④1.65A	600VCT① .220ADC	5VAC 3A	6.3VAC④ 1.8A	D-9.252A D-9.252 ②		P-3070	TP-370 ①
				SEC.4				
				6.3VAC④ 6A				

① Add series Resistor to reduce plate voltage
② Alternate Power Trans.

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	RATING DC RESISTANCE SEC.	REPLACEMENT DATA MAJESTIC PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T2	160Ω	1.3KΩ	C9.230-4			TBO-2 ④	Vert. Osc. Trans.
T3	480Ω	22Ω Tap	C9.253-2	A8130	HV07 ③		Horiz. Output Trans.
	Tap ④ 40Ω	④ 6Ω					
		SEC.#2 0Ω					
T4	700Ω	7.5Ω	C-9.228-5	A-8112	A-3036	TS0-5 ④	Vert. Output Trans.
T5A	20Ω		C- 9.254-3J	DY9	MDF70		Horiz. Deflection Coils
B	60Ω		C9.254-3 ⑤				Vert. Deflection Coils
T6	370Ω		C-9.234-4	FC-10	MF-3		Focus Coil

③ Drill new mtg. holes
④ Drill one new mtg. hole
⑤ Alternate Deflection Yoke

SPEAKER

ITEM No.	RATINGS FIELD RES.	RATINGS V. C. IMP.	REPLACEMENT DATA MAJESTIC PART No.	JENSEN PART No.	QUAM PART No.	NOTES
SP1A	P.M.	3.6Ω	C30.328		10A4A	
	CONE DIA.	V. C. DIA.				
SP1B	10"	1"				

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D. C. RESISTANCE	INDUCTANCE @ CURRENT 1000 ↺	REPLACEMENT DATA MAJESTIC PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
L1	.220ADC	72Ω	2.5 Henries	C-9.237-3	C-2325 ①	C2991	TR 3300 ①	① Drill one new mounting hole

COILS (RF-IF)

ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA MAJESTIC PART No.	REPLACEMENT DATA MERIT PART No.	NOTES
L2	Ant. Coil	0Ω	0Ω	B-36.141-2		Channel 2
L3	Fil. Choke	0Ω				
L4	RF, Mixer Grid & Osc. Coils	0Ω		B-36.141-102		Channel 2
L5	Fil. Choke	0Ω				
L6	1st. Video IF	.8Ω				
L7	2nd. Video IF	.3Ω	.3Ω	C-1.476		
L8	3rd. Video IF	.3Ω	.3Ω	C-1.476		
L9	4th. Video IF	.3Ω	.3Ω	C-1.476		
L10	Peaking Coil	6.8Ω		C-1.522-4		
L11	Peaking Coil	7.5Ω		C-1.522-3	TV-184	
L12	Peaking Coil	6.6Ω		C-1.522-4		
L13	Peaking Coil	6.6Ω		C-1.522-4		
L14	Peaking Coil	6.6Ω		C-1.522-4		
L15	Sound IF	3.4Ω		C-1.529-2		Tap ④ 1.2Ω
L16A	Ratio Det.	4Ω	1.2Ω	C-1.528-1	* TV-110	Used when R50 is in set. Tap ④ 1.2Ω
B	Ratio Det.			1.522-1		Used when R50 is not in set
L17	Horiz. Osc.	110Ω	34Ω	B-1.549	* TV-162	Tap ④ 34Ω
L18A	Horiz. Size	34Ω		B-1533		
B	Horiz. Size			B-1.533-1		Alternate
L19	Horiz. Lin.	21Ω		B-1.531	MWC-1	

* Drill one new mtg. hole
♦ Drill new mtg. holes

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA MAJESTIC PART No. FUSE	MAJESTIC PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M1	3AG	3A. 250V.		B36.131	312003	341001	AGC3	HKP
M2	3AG Pigtail	1/4A. 250V.			318.250		GJV 1/4	

MISCELLANEOUS

ITEM No.	PART NAME	MAJESTIC PART No.	NOTES
M3A	RF Tuner	D-36.137-2	(Standard)
B	RF Tuner	E-36.143	(Starkes) Alternate
M4	Switch		B & W - Color
M5	Ion Trap	C-36.144-2	
M6	Trimmer	B-4.119-2	Horiz. Drive (40-370MMF)
	Ant. Coils	B-36.141-3	Channel #3
	Ant. Coils	B-36.141-4	Channel #4
	Ant. Coils	B-36.141-5	Channel #5
	Ant. Coils	B-36.141-6	Channel #6
	Ant. Coils	B-36.141-7	Channel #7
	Ant. Coils	B-36.141-8	Channel #8
	Ant. Coils	B-36.141-9	Channel #9
	Ant. Coils	B-36.141-10	Channel #10
	Ant. Coils	B-36.141-11	Channel #11
	Ant. Coils	B-36.141-12	Channel #12
	Ant. Coils	B-36.141-13	Channel #13
	RF, Mixer Grid & Osc. Coil	B-36.141-103	Channel #3
	RF, Mixer Grid & Osc. Coil	B-36.141-104	Channel #4
	RF, Mixer Grid & Osc. Coil	B-36.141-105	Channel #5
	RF, Mixer Grid & Osc. Coil	B-36.141-106	Channel #6
	RF, Mixer Grid & Osc. Coil	B-36.141-107	Channel #7
	RF, Mixer Grid & Osc. Coil	B-36.141-108	Channel #8
	RF, Mixer Grid & Osc. Coil	B-36.141-109	Channel #9
	RF, Mixer Grid & Osc. Coil	B-36.141-110	Channel #10
	RF, Mixer Grid & Osc. Coil	B-36.141-111	Channel #11
	RF, Mixer Grid & Osc. Coil	B-36.141-112	Channel #12
	RF, Mixer Grid & Osc. Coil	B-36.141-113	Channel #13

PHONO CARTRIDGE and NEEDLE

ITEM No.	MAJESTIC PART No.	REPLACEMENT DATA ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	SHURE PART No. CARTRIDGE	SHURE PART No. NEEDLE	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. NEEDLE	REMARKS
M6		LQD-1J	Q Q-33			96	0-1 or S-1 and 0-3 or S-3	

ASTATIC AND ELECTRO VOICE NEEDLE LISTINGS SHOWN ABOVE ARE SPECIFIED FOR THE RESPECTIVE REPLACEMENT CARTRIDGES LISTED. FOR ORIGINAL CARTRIDGE NEEDLE REPLACEMENTS SEE BELOW:

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	MAJESTIC PART No.	REPLACEMENT DATA WALCO PART No.	JENSEN PART No.	REMARKS
M7		W-2A or W-2B and W-2MGA or W-2MGS	A-80 or A-81 and A-80LP or A-81LP	

RADIO PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA		RMA BASE TYPE	NOTES
		MAJESTIC PART No.	STANDARD REPLACEMENT		
V20	FM RF Amplifier - FM Mixer	12AT7	12AT7	9A	
V21	FM Oscillator - AM Converter	6BE6	6BE6	7CH	
V22	FM AM IF Amp.	6BA6	6BA6	7BK	
V23	FM IF Amplifier	6BA6	6BA6	7BK	
V24	Ratio Detector	6AL5	6AL5	6BT	
V25	AM Detector-AVC-AF Amplifier	6AV6	6AV6	7BT	
V26	Audio Output	6V6GT	6V6GT	7AC	
V27	Rectifier	5Y3GT	5Y3GT	5T	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		REPLACEMENT DATA						IDENTIFICATION CODES AND INSTALLATION NOTES
	CAP.	VOLT	MAJESTIC PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	
C74A	20	450	C-5.421-7	AFH4-67		UP22245C		TVL-4667	▲ Filter
B	20	450							■ Filter
C	20	450							▲ Decoupling
D	20	25							Audio Output Cathode
C75	4	50	C-5.430-1	PRS150/4		BR550		TVA-1303	Stabilizing Cap.
C76	5000		B-4.115-1	BPD-005	DD-502	TM5D5	811-005	5HK-D5	FM RF Amp. Cathode
C77	5000		B-4.115-1	BPD-005	DD-502	TM5D5	811-005	5HK-D5	FM RF Amp. Dec.
C78	220			SI220	D6-221	5W5T25	GP2K-221	5GA-T22	FM RF Amp. Fil.
C79	33			SI33	D6-330		GP1K-330	5GA-Q33	FM RF Coupling
C80	33			SI33	D6-330		GP1K-330	5GA-Q33	FM RF Coupling
C81	2.2				TCZ-2.2		NP0K-2R2		FM Osc. Coupling
C82	5			SI5NP0	TCZ-4.7		NP0K-050		Fixed Trimmer
C83	100			SI100	D6-101	TM5T1	GP1K-101	5GA-T1	Fixed Trimmer
C84	5000		B-4.115-1	BPD-005	DD-502	TM5D5	811-005	5HK-D5	FM Mixer Plate
C85A	5000		B-4.125-1	BPD-005	DD-2-502	TM5D5	811-005	5HK-2D47	Conv. Fil. Bypass
B	5000			BPD-005		TM5D5	811-005		Osc. Anode Bypass
C86	470			SI470	D6-470	5W5T5	GP2K-471	5GA-T47	Osc. Anode Bypass
C87	25			SI25	D6-250	5W5Q25	GP1K-250	5GA-Q25	Osc. Grid Cap.
C88	5			SI5NP0	TCZ-4.7		NP0K-050		Osc. Feedback
C89A	5000		B-4.125-1	BPD-005	DD-2-502	TM5D5	811-005	5HK-2D47	Conv. Plate Dec.
B	5000			BPD-005		TM5D5	811-005		AVC Filter
C90	.02	200		P488-02	DF-203	PJ2S2		2TM-S2	AVC Filter
C91	5000		B-4.115-1	BPD-005	DD-502	TM5D5	811-005	5HK-D5	IF Amp. Plate Dec.
C92	5000		B-4.115-1	BPD-005	DD-502	TM5D5	811-005	5HK-D5	IF Amp. Screen Bypass
C93	5000		B-4.115-1	BPD-005	DD-502	TM5D5	811-005	5HK-D5	FM IF Amp. Plate
C94A	5000		B-4.125-1	BPD-005	DD-2-502	TM5D5	811-005	5HK-2D47	FM IF Amp. Screen
B	5000			BPD-005		TM5D5	811-005		FM IF Amp. Cathode
C95	470			SI470	D6-470	5W5T5	GP2K-471	5GA-T47	Diode Load Cap.
C96	1500			SI1500	D6-152	TM5D15	GP2L-152	5HK-D15	De-Emphasis
C97	47			SI47	D6-470	5W5Q5	GP1K-470	5GA-Q47	Diode RF Filter
C98	470			SI470	D6-471	5W5T5	GP2K-471	5GA-T47	Tone Comp.
C99	.015	600		P688-015		PTE6S15		6TM-S15	Audio Coupling
C100	220			SI220	D6-221	5W5T25	GP2K-221	5GA-T22	AF Amp. Grid Filter
C101	220			SI220	D6-221	5W5T25	GP2K-221	5GA-T22	AF Amp. Plate Bypass
C102	.02	600		P688-02	DF-203	PTE6S2		6TM-S2	Audio Coupling
C103	.005	600		P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Tone Comp.
C104	.015	200		P288-015		PTE6S15		6TM-S15	Tone Comp.
C105	.005	600		P688-005	D6-502	PTE6D5	GP2-333-502	6TM-D5	Audio Output Plate
C106A	5000		B-4.125-1	BPD-005	DD-2-502	TM5D5	811-005	5HK-2D47	Line Filter
B	5000			BPD-005		TM5D5	811-005		Line Filter
C107	470			SI470	D6-471	5W5T5	GP2K-471	5GA-T47	AM RF Coupling

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA				INSTALLATION NOTES
	RESISTANCE	WATTS	MAJESTIC PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	
R97A	1Meg	½	C-8.218-2	QJ-179 *			Tone Control - Panel
B	1Meg	½					Volume Control & Sw. - Tapped @ 500KΩ - Rear

*CONCENTRIKIT EQUIVALENT - KIT K-2, BASE ELEMENTS & SHAFTS B11-137 & P2-218, (Panel), B19-137X & R1-304 (Rear) & SWITCH 76-1.

RESISTORS

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	MAJESTIC PART No.	IRC PART No.	
R98	82Ω	½		BTS-82	FM RF Amp. Cathode
R99	27Ω	½			Parasitic Suppressor
R100	4700Ω	1		BTA-4700	FM RF Amp. Plate Decoupling
R101	470KΩ	½			FM Mixer Grid
R102	1000Ω	½		BTS-1000	FM Mixer Plate Decoupling
R103	27Ω	½			Parasitic Suppressor
R104	1Meg	½		BTS-1Meg	AM Converter Grid
R105	22KΩ	½			FM Osc. Grid
R106	4700Ω	½		BTS-4700	AM Converter Plate Decoupling
R107	470KΩ	½		BTS-470K	AVC Network
R108	47Ω	½			1st. IF Amp. Cathode
R109	33KΩ	1			1st. IF Amp. Screen
R110	1000Ω	½		BTS-1000	1st. IF Amp. Decoupling
R111	82Ω	½		BTS-82	2nd. IF Amp. Cathode
R112	33KΩ	1			2nd. IF Amp. Screen
R113	1000Ω	½		BTS-1000	2nd. IF Amp. Plate Decoupling
R114	330Ω	½		BTS-330	Balancing
R115	47KΩ	½		BTS-47K	De-emphasis
R116	8200Ω	½		BTS-8200	Ratio Det. Diode Load
R117	8200	½		BTS-8200	Ratio Det. Diode Load

RADIO PARTS LIST AND DESCRIPTIONS (Continued)

PROPERTY OF
L. F. BLANKENSHIP
DENVER, COLORADO

RESISTORS (CONT.)

ITEM No.	RATING		REPLACEMENT DATA		IDENTIFICATION CODES
	RESISTANCE	WATTS	MAJESTIC PART No.	IRC PART No.	
R118	47K	½		BTS-47K	Diode Filter
R119	1Meg	½		BTS-1Meg	AVC Network
R120	15KΩ	½		BTS-15K	Tone Compensation
R121	3.3Meg	½		BTS-3.3Meg	AF Amp. Grid
R122	330KΩ	½		BTS-330K	AF Amp. Plate
R123	5600Ω	1		BTA-5600	Decoupling
R124	330KΩ	½		BTS-330K	Output Grid
R125	390Ω	1		BTA-390	Output Cathode
R126	5600Ω	1		BTA-5600	Decoupling

TRANSFORMER (POWER)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	MAJESTIC PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T7	117VAC @ .750A	600VCT @ .097 ADC	5VAC @ 2A	6.3VAC @ 2.25A	D-9.248A	PC8409 ①	P-3153 ① ③	PV-120 ③

① Add series Resistor to reduce plate voltage
③ Drill new mounting holes

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		MAJESTIC PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T8	8KΩ	3.6Ω	530Ω	.5Ω	C-9.256				
	Pri #2		Pri.#2						
	4.5KΩ		12.5Ω						

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ↶)	MAJESTIC PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
L20	.097ADC	210Ω	4.5 Hy.	C-9.255A		C-2993 ①	R-885 ①	① Drill one new mtg. hole

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	MAJESTIC PART No.	MERIT PART No.	
L21	FM Ant. Coil	0Ω		B-1.445-3		
L22	Fil. Choke	0Ω		B-1.501		
L23	RF Choke	.8Ω		B-1.512		
L24	FM RF Coil	0Ω		B-1.539		
L25	FM Osc. Coil	0Ω		B-1.538		
L26	AM Loop Ant.	1.2Ω		D-1.540		
L27	RF Choke	.3Ω		B-1.535-1		
L28	Darasitic Supp.	0Ω		B-1.536-2		Wound on 27Ω Resistor
L29	Fil. Choke	0Ω		B-1.501		
L30	AM Osc. Coil	6Ω		C-1.436-2	BC-881	Tap @ .4Ω
L31	Parasitic Supp.	0Ω		B-1.536-1		Wound on 820Ω Resistor
L32	1st FM IF	.5Ω	.5Ω	C-1.446-2	*FM-254	
L33	1st. AM IF	14.3Ω	13.9Ω	C-1.445-3	BC-352	
L34	Fil. Choke	0Ω		B-1.501		
L35	2nd. FM IF	.6Ω	.6Ω	C-1.446-3	FM-254	
L36	2nd. AM IF	14Ω	14Ω	C-1.445-3	BC-353	
L37A	Ratio Det.	1.6Ω	.8Ω	C-1.542-1	FM-255	Can height 1 15/16" Tap @ .8Ω
B	Ratio Det.			C-1.524		Can height 2½"

* Remove 100MMF cap.

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					MAJESTIC PART No.		
M8	Bayonet	6-8	.25	Blue			Type #44
M9	Bayonet	6-8	.25	Blue			Type #44

MISCELLANEOUS

ITEM No.	PART NAME	MAJESTIC PART No.	NOTES
M10	Switch	C-11.227-1	AM-FM-Phono
M11	Tuning Cap	C-2.222	28-538MMF-24-206MMF
A38	Trimmer	B-4.118	.7-3.5MMF (FM Osc.)

RADIO ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Turn the tuning gang fully open and set the pointer to coincide with the last mark at the high frequency end of the dial.

AM ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdrive for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
13.	.005MFD	High side to stator plates of rear broadcast section of tuning gang. Low side to chassis.	455KC (400∿ mod.)	AM (1st. pos. clockwise)	Tuning gang fully open.	Across voice coil.	A26, A27, A28, A29	Adjust for maximum output.
14.	"	"	1650KC	"	"	"	A30	"
15.	Direct	Loop	1500KC	"	1500KC	"	A31	"

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
16.	.005MFD	High side to Pin 7, (grid) of 12AT7 (V20). Low side to chassis.	10.7MC (unmod.)	FM (fully counter clock-wise).	Tuning gang fully open.	DC probe to Point (F). Common to chassis.	A32, A33 A34, A35 A36	Adjust for maximum deflection. Attenuate generator to maintain 2 volts reading or less.
17.	"	"	"	"	"	DC probe to Point (B). Common to Point (G).	A37	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
16.	.005MFD	High side to Pin 7 (grid) of 12AT7 (V20). Low side to chassis.	10.7MC (450KC swp	FM	Tuning gang fully open	Vert. amp. to Point (F). Low side to chassis.	A32, A33, A34, A35, A36	Disconnect stabilizor capacitor C75. Adjust for maximum amplitude and symmetry as per Fig. 6.
17.	"	"	"	"	"	Vert. amp. to Point (H). Low side to chassis.	A37	Reconnect capacitor C75. Adjust so that 10.7MC occurs at center of crossover lines per as Fig. 7. SLIGHTLY retouch A36 for maximum amplitude and straightness of crossover lines.

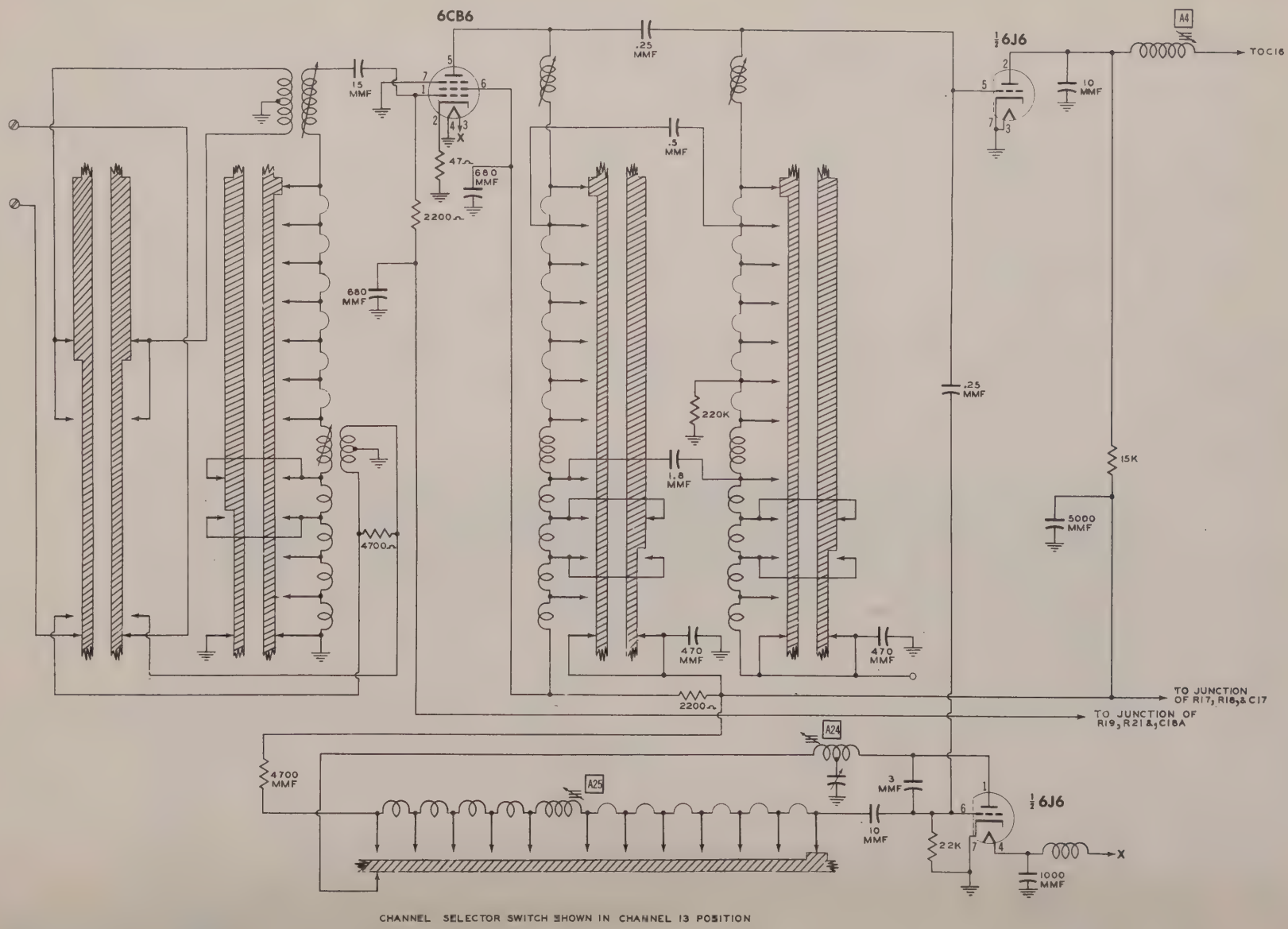
FM RF ALIGNMENT

The signal generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
18	Two 120Ω carbon resistors	Across FM antenna terminals with 120Ω in each lead.	108.5MC (unmod.)	FM	Tuning gang fully open.	DC probe to Point (F). Common to chassis.	A38	Adjust for maximum deflection.
19.	"	"	105MC	"	105MC	"	A39	"

FIG. 6

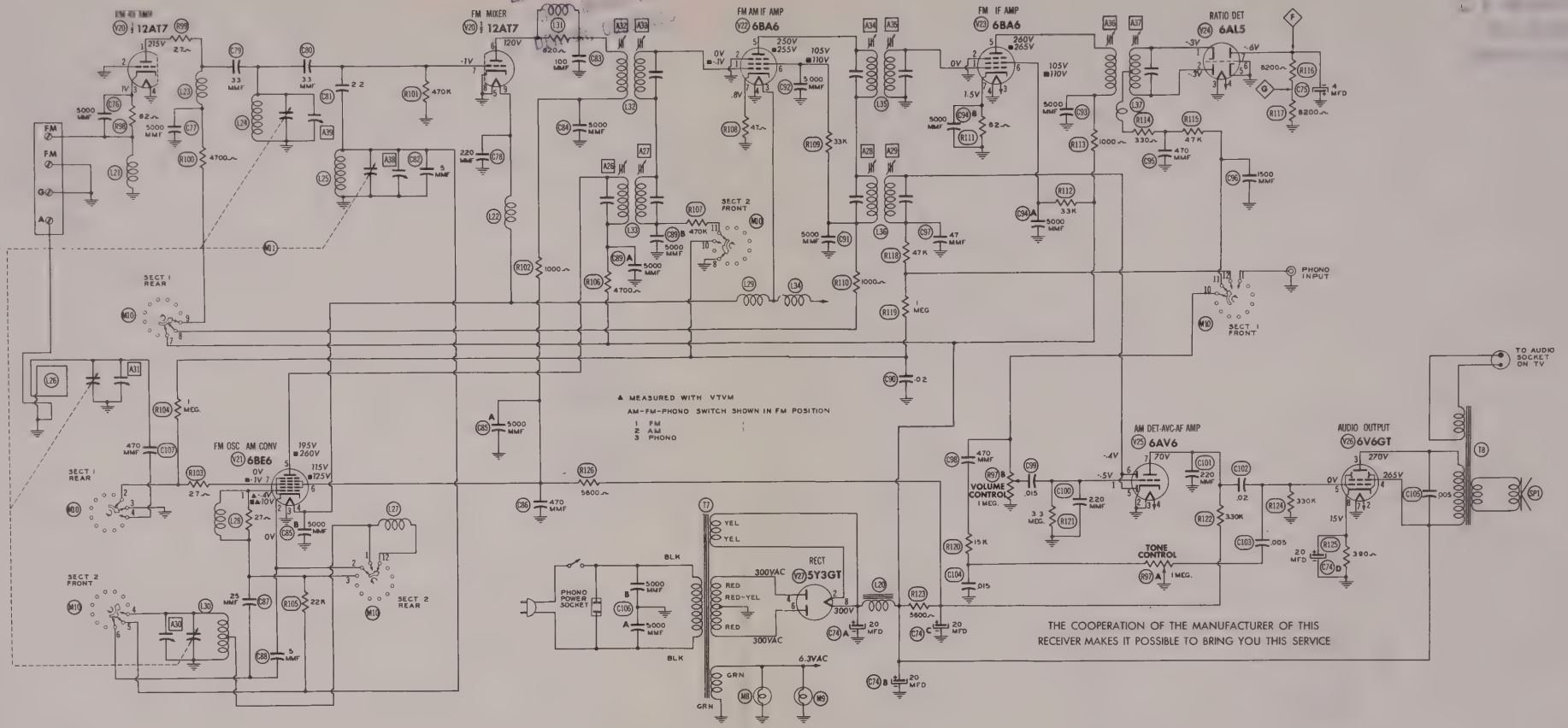
FIG. 7



CHANNEL SELECTOR SWITCH SHOWN IN CHANNEL 13 POSITION

ALTERNATE TUNER SCHEMATIC

PROPERTY OF
L. F. BLANKENSHIP



RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	12AT7	†4.9KΩ	0Ω	82Ω	0Ω	0Ω	†12KΩ	470KΩ	0Ω	.1Ω
V 2	6BE6	22KΩ	1Ω ■.5Ω	0Ω	.1Ω	†4.9KΩ	†12KΩ	27Ω ■2.5Meg		
V 3	6BA6	2Meg ■470KΩ	0Ω	.1Ω	0Ω	†1.2KΩ	†34KΩ	47Ω		
V 4	6BA6	.6Ω	0Ω	.1Ω	0Ω	†1.2KΩ	†34KΩ	82Ω		
V 5	6AL5	750KΩ	750KΩ	0Ω	.1Ω	0Ω	0Ω	16KΩ		
V 6	6AV6	3.3Meg	0Ω	0Ω	.1Ω	1.9Meg ■750KΩ	1.9Meg ■750KΩ	†335KΩ		
V 7	6V6GT	INF	.1Ω	†335Ω	†210Ω	330KΩ	INF	0Ω	390Ω	
V 8	5Y3GT	INF	100KΩ	INF	155Ω	INF	145Ω	INF	100KΩ	

ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS NOTED
■ MEASURED IN "AM" POSITION
† MEASURED FROM PIN 2 OF V27

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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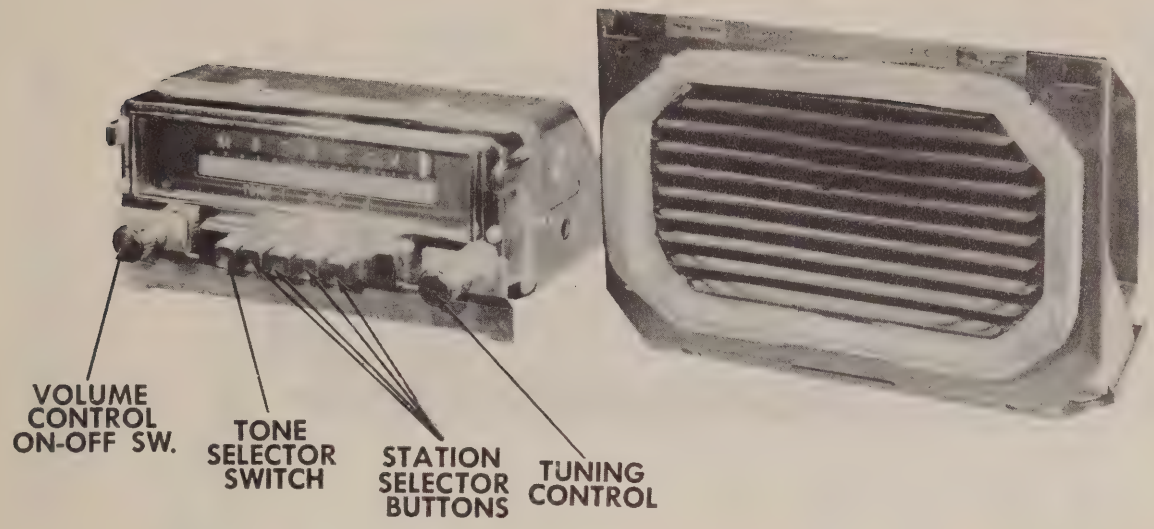
MAJESTIC
MODELS 20FP88, 20FP89

RADIO SCHEMATIC

PROPERTY OF
L. E. BLANKENSHIP

MOPAR
MODEL 607



TRADE NAME	Mopar Model 607 (For Dodge Models D-41 and D-42)
MANUFACTURER	Motorola Inc., 4545 Augusta Blvd., Chicago, Ill.
TYPE SET	Battery Operated Custom Built Automobile Superheterodyne Receiver
TUBES (Six)	Types 6BA6 RF Amp., 6BE6 Conv., 6BA6 IF Amp., 6AT6 Det.-AVC-AF Amp., 6AQ5 Audio Output, 6X4 Rectifier
POWER SUPPLY	6 Volt Storage Battery — RATING 8.6 Amp @ 6.3 Volts DC
TUNING RANGE—BROADCAST	540 - 1600 KC

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Set tone control to "High" position
Before performing step 2 back out tuner cores A8, A9 and A10 until 1 3/16" of core projects from the end of coil with tuner in extreme high frequency position.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1MFD	High side to pin 7 (grid) of 6BE6 (V2) Low side to chassis	455KC (400~ Mod)	Extreme high frequency end of dial.	Across voice coil	A1, A2 A3, A4	Adjust in order given for maximum output.
2.	Fig. 1	Through dumm to ant. input receptacle	1610 KC	"	"	A5, A6 A7	"
3.	"	"	1400 KC	Tune manually to 1400 KC Signal	"	A8, A9 A10	"
4.	"	"	1610 KC	Tune manually to 1610 KC Signal	"	A6, A7	"
5.	"	"	1400 KC	Tune manually to 1400 KC Signal	"	A9, A10	Adjust in order given for maximum output. Repeat step 4.

With set aligned and installed in car and antenna fully extended tune to weak signal near 1400 KC and peak antenna trimmer A7 for maximum volume.

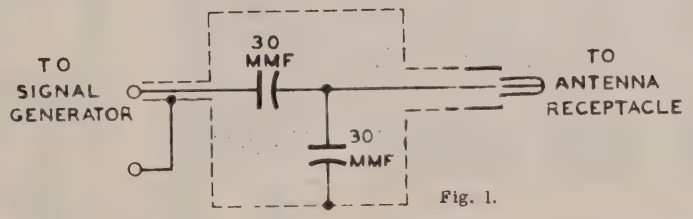


Fig. 1.

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PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: MOTOROLA PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	RF Amplifier	6BA6	6BA6	7BK	
V2	Converter	6BE6	6BE6	7CH	
V3	IF Amplifier	6BA6	6BA6	7BK	
V4	Det. AVC-AF Amp.	6AT6	6AT6	7BT	
V5	Audio Output	6AQ5	6AQ5	7BZ	
V6	Rectifier	6X4	6X4	5BS	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: MOTOROLA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	30	350	23A473015	AFH3-169		UP335-330C		TVL-3620	■ Filter
B	30	300							▲ Filter
C	20	25							Audio Output Cathode
C2	90		21A591682						Fixed Trimmer
C3	.006	200	8A4529	P488-006		PTE6D6	GP2-333-602	6TM-D6	RF Coupling
C4	.05	200	8K13514	P288-05	DF-503	PJ2S5		2TM-S5	AVC Filter
C5	.05	400	8R14971	P488-05	DF-503	PTE4S5		4TM-S5	Decoupling
C6	5		21K70720	SI5	TCZ-4.7		GP1K-050		RF Coupling
C7	47		21R6513	SI47N750	TCN-47		N750K-470	5TCU-Q47	Osc. Grid Cap.
C8	100								Fixed Trimmer
C9	5		21K70720	SI5	TCZ-4.7		GP1K-050		IF Coupling
C10	.006	100	8A4529	P488-006		PTE6D6	GP2-333-602	6TM-D6	Audio Coupling
C11	.006	400	8K71910	P488-006		PTE6D6	GP2-333-602	6TM-D6	Tone Comp.
C12	.03	400	8K71911	P488-03		PTE6S3		6TM-S3	Audio Coupling
C13	470	500	21R6590	1468-0005	D6-471	5W5T5	GP2K-471	1FM-35	Audio Output Grid
C14	.006	400	8K71910	P488-006		PTE6D6	GP2-333-602	6TM-D6	Audio Output Plate
C15	.02	1000	8K114137	P1088-02		PTE16S2		MB-S2	Buffer Cap.
C16	.5	100	8C580845	P185-5		MP2P5		68P20	Hash Filter
C17	.5	100	8C580845	P185-5		MP2P5		68P20	Hash Filter

CONTROLS

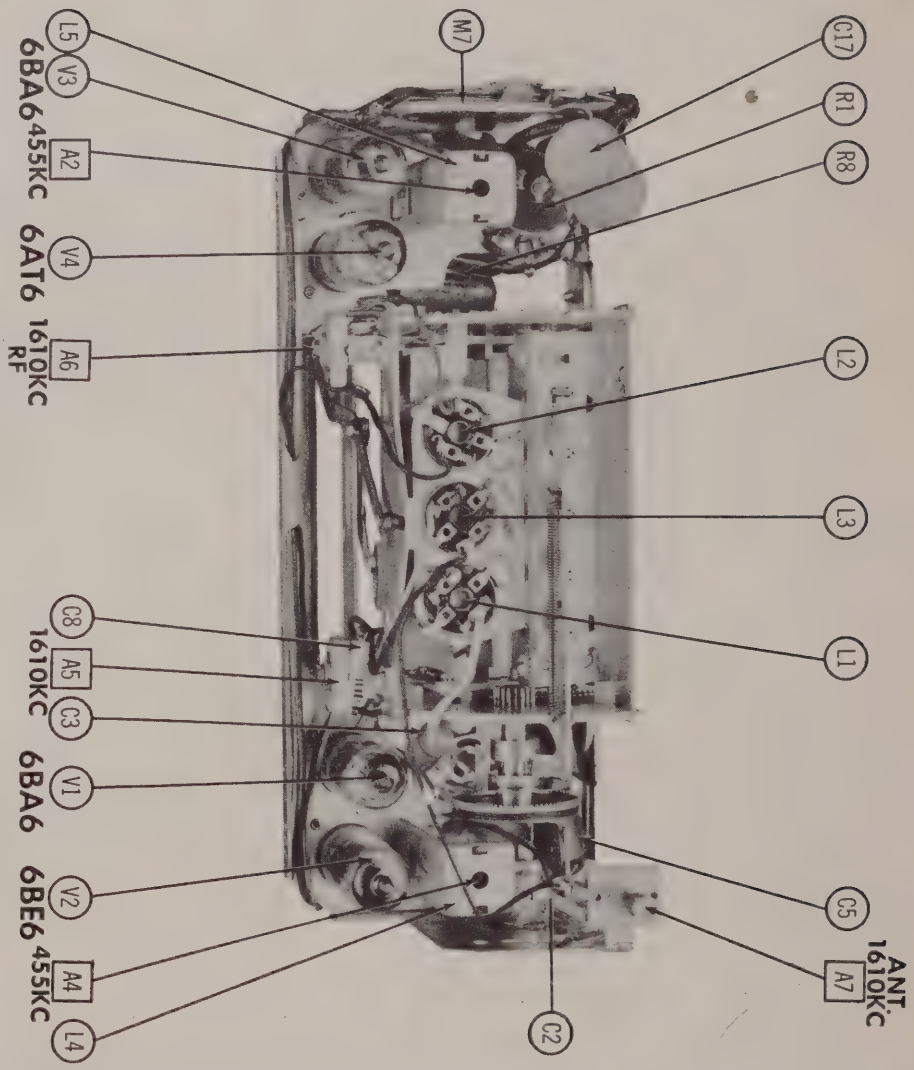
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MOTOROLA PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	500KΩ	½	18A502798	Q13-133			Volume Control
B	Shaft		Not Req.	NQ			Attach to R1A per instructions
C	Switch		Not Req.	76-1			Attach to R1A per instructions
D	Bushing		Not Req.	S-5*			Attach to R1A per instructions

* Cut bushing to duplicate original.

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: MOTOROLA PART No.	IRC PART No.	IDENTIFICATION CODES
R2	470KΩ	½	6R6032	BTS-470K	RF Amp. Grid
R3	100KΩ	½	6R6075	BTS-100K	Converter Grid
R4	33KΩ	½	6R6012		Osc. Grid
R5	270Ω	½	6R6432	BTS-270	IF Amp. Cathode
R6	1Meg	½	6R6004	BTS-1Meg	AVC Network
R7	6800Ω	2	6R490349	BTB-6800	Decoupling
R8	47KΩ	½	6R6056	BTS-47K	Diode Filter
R9	1Meg	½	6R6004	BTS-1Meg	Diode Load
R10	6800Ω	½	6R6428	BTS-6800	AF Amp. Cathode
R11	3.3Meg	½	6R2118	BTS-3.3Meg	AF Amp. Grid
R12	470KΩ	½	6R6032	BTS-470K	AF Amp. Plate
R13	27KΩ	½	6R6434	BTS-27K	Tone Compensation
R14	470KΩ	½	6R6032	BTS-470K	Output Grid
R15	220Ω	1	6R6389	BTS-220	Output Cathode
R16	1000Ω	2	6R476004	BTB-1000	Filter
R17	56Ω	½	6R5614		Hash Suppression
R18	56Ω	½	6R5614		Hash Suppression

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (VIBRATOR)

ITEM No.	RATING				REPLACEMENT DATA			
	PRI.	SEC. 1	SEC. 2	SEC. 3	MOTOROLA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	6.3VAC @ 2.4A	480VCT @ .50ADC			25C501644		P-3068 ①	VT-2

① Drill new mtg. holes

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		MOTOROLA PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T2	5.5K	3.4Ω	600Ω	.5Ω	25B501684-G	A-3877 ①	A-3019 ②	R0-9 ①	② Bend down tabs and mount on original bracket.

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	MOTOROLA PART No.	JENSEN PART No.	QUAM PART No.	
SP1A	5Ω	3.4Ω	50C510790	ST-814 Mod. F69-T	69EV6 ①	① Install special flange holes
	CONE DIA.	V. C. DIA.				
SP1B	6"x9"	3/4"				

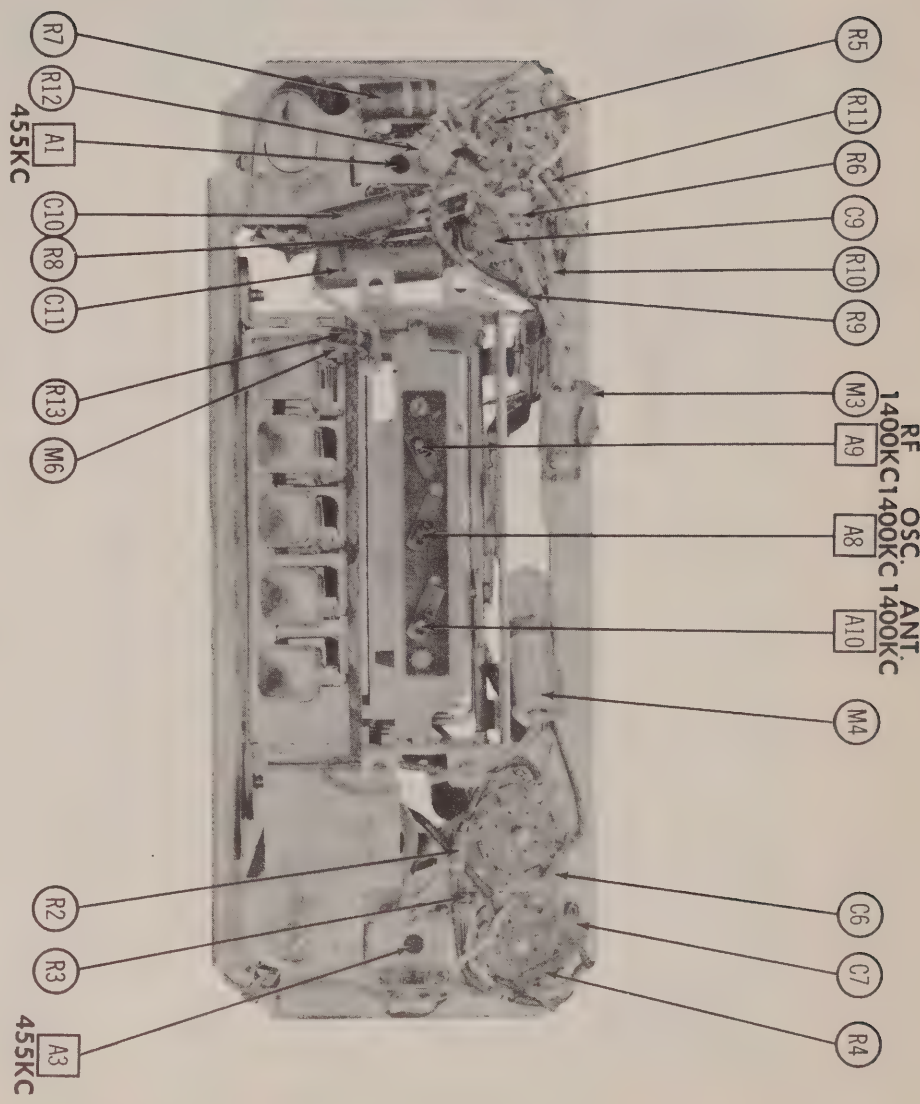
COILS (RF-IF)

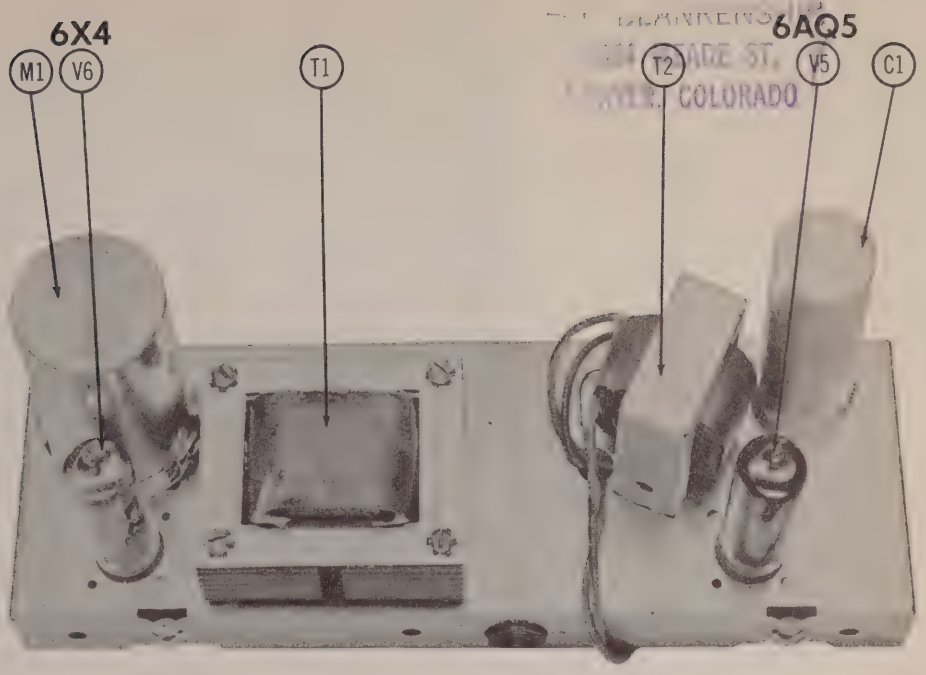
ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	MOTOROLA PART No.	MERIT PART No.	
L1	Ant. Coil	12Ω		24B71881		
L2	RF Coil	12Ω		24B71881		
L3	Osc. Coil	1.2Ω	2.9Ω	24K510793		
L4	Input IF	17Ω	17Ω	24B485553	BC-352	Alternate Part #24K502819
L5	Output IF	17Ω	17Ω	24K485554		
L6	Fil. Choke	.1Ω		24K472535		

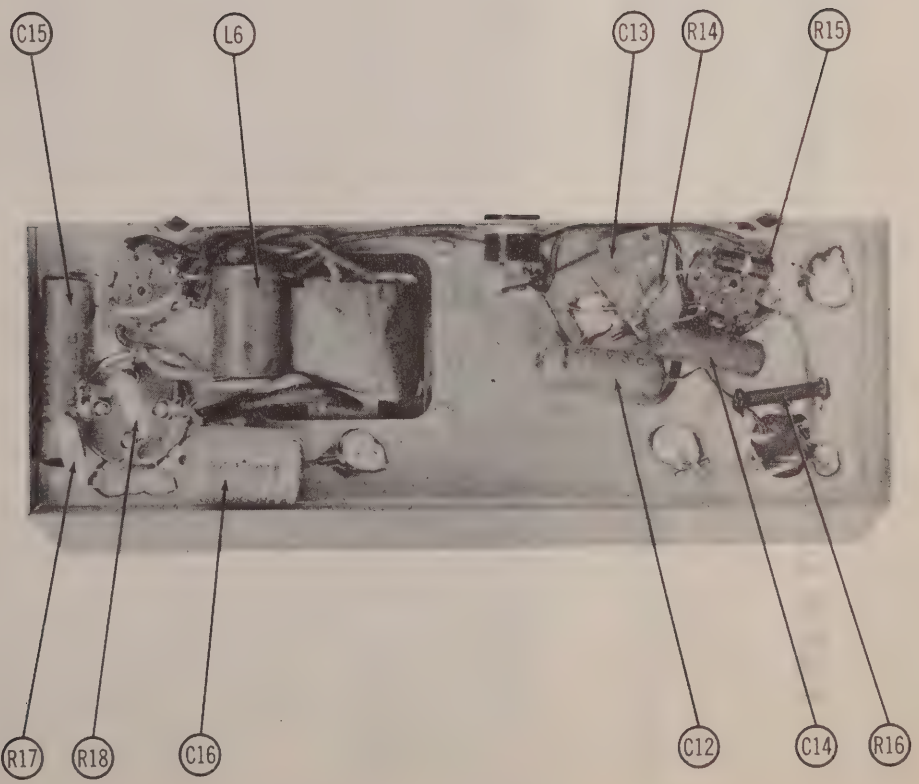
VIBRATOR

ITEM No.	TYPE	INPUT VOLTS	FREQUENCY	REPLACEMENT DATA			INSTALLATION NOTES
				MOTOROLA PART No.	CORNELL-DUBILIER PART No.	RADIART PART No.	
M1	Interrupter	6.3 VDC	115CPS	3333	5342	5342	

CHASSIS—BOTTOM VIEW




6X4
6AQ5
M1
V6
T1
T2
V5
C1


C15
L6
C13
R14
R15
R17
R18
C16
C12
C14
R16

PARTS LIST AND DESCRIPTIONS (Continued)

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			MOTOROLA PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2	SFE	14A.	65K12894	9K512229	307014	155014	SFE14	HDI

DIAL LIGHTS

ITEM No.	BASE TYPE	VOLTS	AMPS.	BEAD COLOR	REPLACEMENT DATA		NOTES
					MOTOROLA PART No.		
M3	Bayonet	6-8	.25	Blue	65X10867		Type #44
M4	Bayonet	6-8	.25	Blue	65X10867		Type #44

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M5A	Tuner Unit	51K512163	
B	Tuner Unit	51K512162	Alternate
M6	Switch	51A511091	Tone
M7	Spark Plate	1A512217	Complete Assembly
A5	Trimmer	20A485708	Osc. Adj. (395-470MMF)
A6	Trimmer	20A481526	RF Adj. (20-180MMF)
A7	Trimmer	20B512238	Ant. Adj. (50-280MMF)
	Dial Glass	61A502799	
	Pointer	52B502793	
	Knob	1X512281	Volume or tuning

PUSH BUTTON ADJUSTMENT

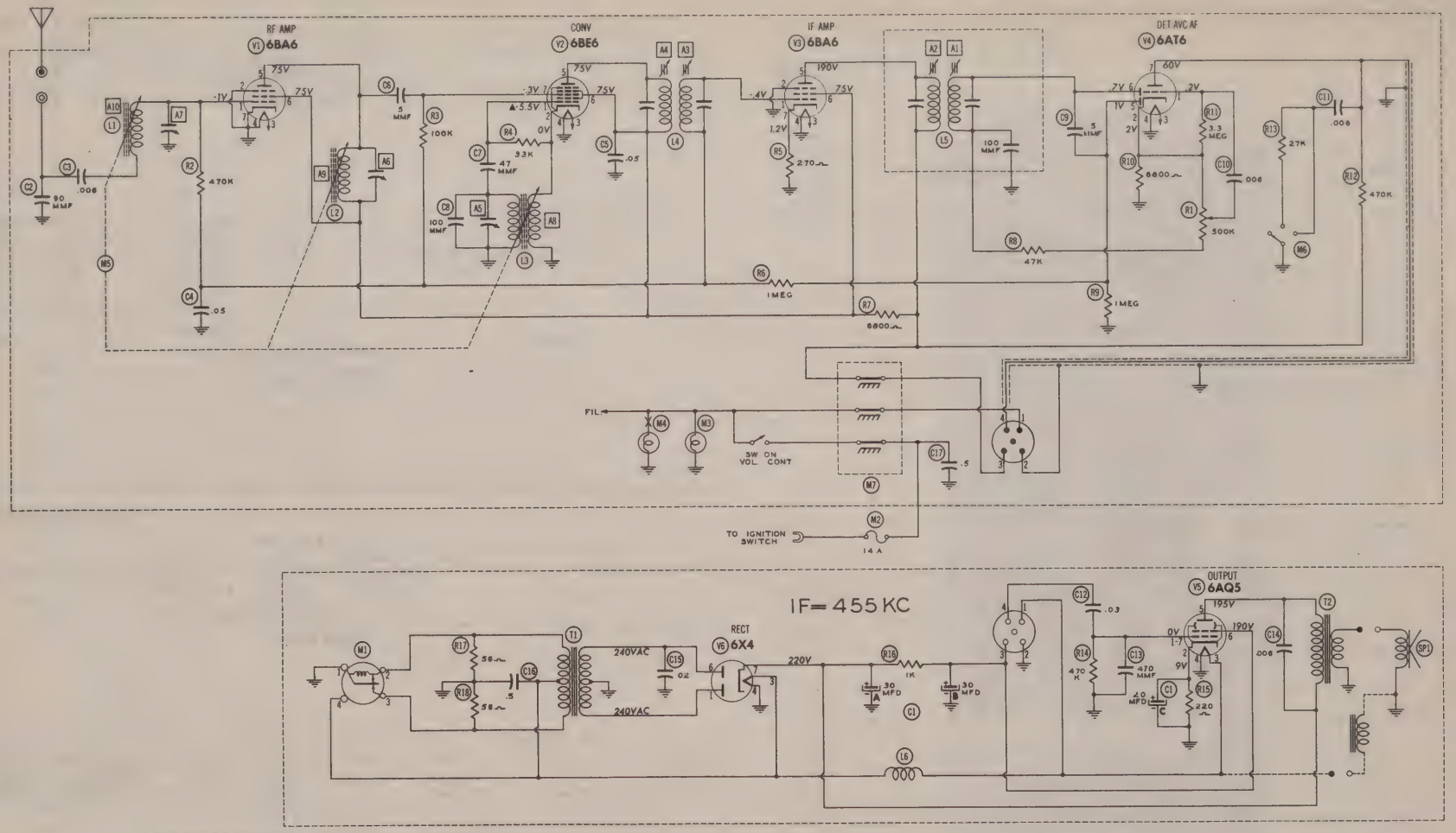
To set pushbuttons for automatic tuning proceed as follows:

Pull out button to unlock.

Tune manually to desired station and push button all the way in.

Check setting of button on desired station.

Proceed in similar manner with the three remaining push buttons



1 - DC Voltage measurements are at 20,000 ohms per volt, AC Voltages measured at 1000 ohms per volt.
2 - Socket connections are shown as bottom views.
3 - Measured values are from socket pin to common negative.
4 - Battery voltage maintained at 6.3 volts for voltage readings.
5 - Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6 - Volume control at maximum, no signal applied for voltage measurements.

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	6BA6	2.5Meg	0Ω	.1Ω	0Ω	†7.8KΩ	†7.8KΩ	0Ω
V 2	6BE6	33KΩ	1.2Ω	.1Ω	0Ω	†7.8KΩ	†7.8KΩ	2.1Meg
V 3	6BA6	2Meg	0Ω	.1Ω	0Ω	†1KΩ	†7.8KΩ	270Ω
V 4	6AT6	3.3Meg	6.8KΩ	.1Ω	0Ω	1Meg	550KΩ	†470KΩ
V 5	6AQ5	470KΩ	230Ω	.1Ω	0Ω	†600Ω	†1KΩ	470KΩ
V 6	6X4	380Ω	INF	.1Ω	0Ω	INF	410Ω	90KΩ

† MEASURED FROM PIN 7 OF V6
▲ TAKEN WITH VACUUM TUBE VOLTMETER

THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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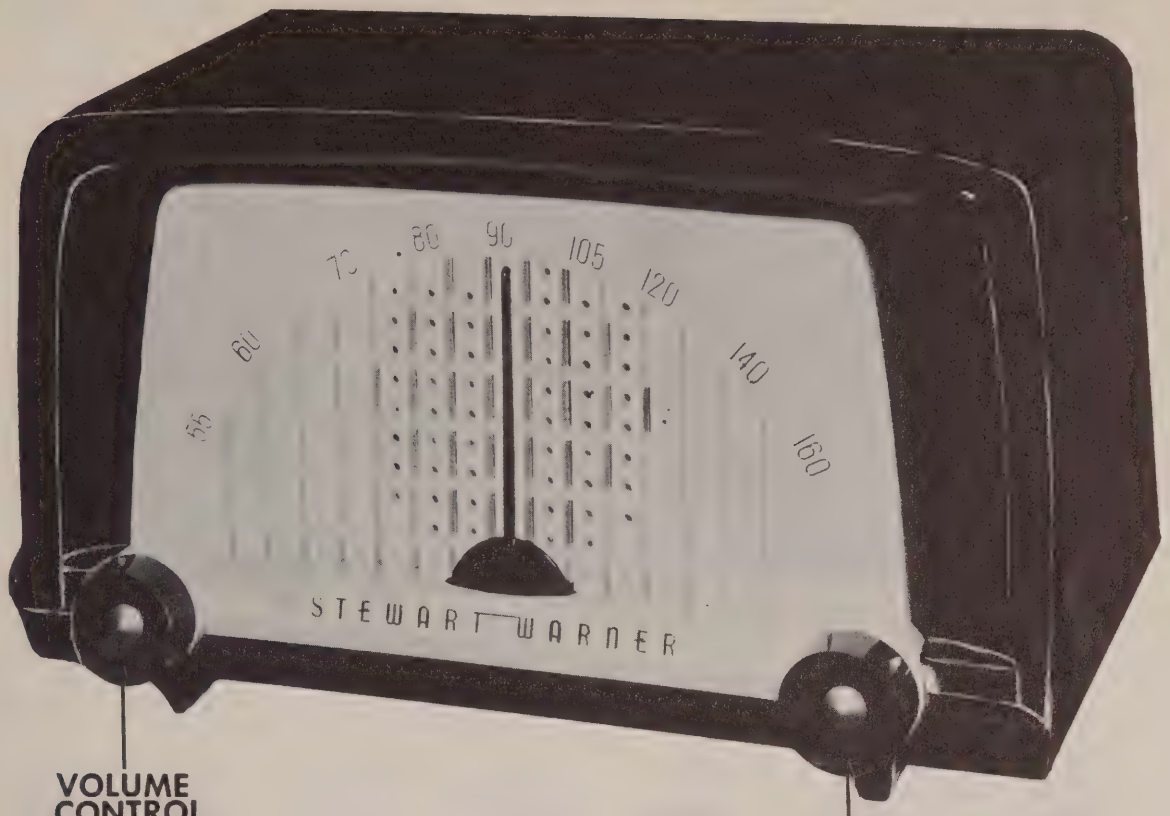
STEWART-WARNER
MODELS 9161-A, -B, -C



STEWART-WARNER
MODELS 9161-A, -B, -C

TRADE NAME	Stewart-Warner Models 9161-A, -B, -C
MANUFACTURER	Stewart-Warner Electric, Div. of Stewart Warner Corp., 1300 N. Kostner, Chicago 15, Ill.
TYPE SET	AC-DC Operated AM Superheterodyne Receiver
TUBES(Five)	Types 12BE6 Conv., 12BA6 IF Amp., 12AT6 Det.-AVC-AF Amp., 50C5 Audio Output, 35W4 Rectifier
POWER SUPPLY	110-120 Volts AC-DC
RATING	.230 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	530-1620 KC
SHORT WAVE	

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The dial settings for steps 2 and 3 are made while the receiver chassis is in place in the cabinet, then the chassis is removed for alignment, care being taken not to disturb the setting of the tuning gang.
To set pointer, place receiver in cabinet and turn tuning gang fully closed. Set the pointer directly over the third dot or depression on the first left hand vertical bar of the speaker grill.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading. Use an insulated alignment screwdriver for adjusting.
Use isolation trasnformer if available.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.		Loop	455 KC (400~ Mod)	Any point of non-interference	Across voice Coil	A1, A2, A3, A4	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output. Repeat adjustment.
2.		"	1500 KC	1500 KC	"	A5	Adjust for maximum output
3.		"	1500 KC	Tune to 1500 KC signal	"	A6	"

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PARTS LIST AND DESCRIPTIONS

STEWART-WARNER MODEL 9161-A

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: Stewart-Warner PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	INSTALLATION NOTES
V1	Converter	12BE6	12BE6	7CH	
V2	IF Amplifier	12BA6	12BA6	7BK	
V3	Det-AVC-AF Amp	12AT6	12AT6	7BT	
V4	Audio Output	50C5	50C5	7CV	
V5	Rectifier	35W4	35W4	5BQ	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: Stewart-Warner PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	50	150	509837	PRS150/50-30		FDL-5315		TVA-2450	Filter (Red)
B	30	150							Filter (Blue)
C2	33		513028	SI33	D6-330		GPIK-330	5GA-Q33	Osc. Grid Cap.
C3	.05	400	512028	P488-05	DF-503	PTE4S5		4TM-S5	AVC Filter
C4A	220		♦509836		♦PC-150				Diode RF Filter
B	.002								Audio Coupling
C	.005								Audio Coupling
D	250								AF Amp. Plate Bypass
E									Audio Output Grid
C5	.02	400	512016	P488-02	DF-203	PTE4S2		4TM-S2	Audio Output Plate
C6	.05	400	512028	P488-05	DF-503	PTE4S5		4TM-S5	Rectifier Plate
C7	.15	400	512040	P488-15		PTE4P15		4TM-P15	Line Isolation

♦ Items C4A, C4B, C4C, C4D, C4E, R5A, R5B, R5C are combined in one unit.
When replacing items separately C4D and C4E should total 250MMF.

CONTROLS

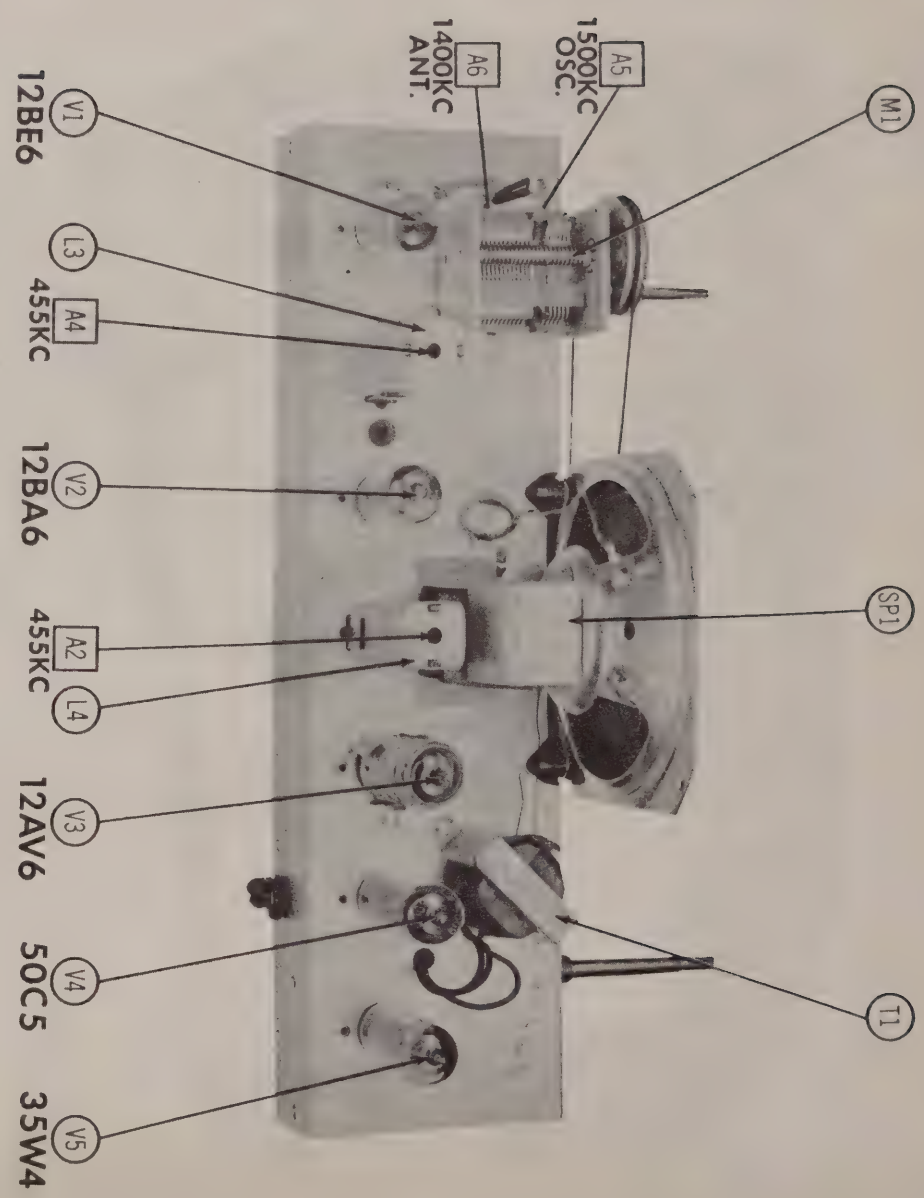
ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: Stewart Warner PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	1Meg	½	520118	Q13-137	AG-63-Z	BSK-70-S	Volume Control
B	Shaft		Not Req.	Not Req.	KSS-3	Not Req.	Attach to R1A per instructions
C	Switch		Not Req.	76-1	SWB	Not Req.	Attach to R1A per instructions

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: Stewart-Warner PART No.	IRC PART No.	IDENTIFICATION CODES
R2	22KΩ	½	510161		Osc. Grid
R3	100Ω	½	510119	BTS-100	IF Amp. Cathode
R4	3.3Meg	½	510194	BTS-3.3Meg	AVC Network
R5A	6.8Meg	½	♦509836	BTS-6.8Meg	AF Amp. Grid
B	470KΩ	½		BTS-470K	AF Amp. Plate
C	470KΩ	½		BTS-470K	Output Grid
R6	150Ω	½	510122	BTS-150	Output Cathode
R7	1000Ω	½	510237	BTA-1000	Filter
R8	27Ω	½	510108		Rectifier Ballast
R9	33Ω	1	510209		Filament Dropping

♦ Items R5A, R5B, R5C, C5A, C5B, C5C, C5D, C5E are combined in one unit.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		Stewart-Warner	STANCOR	MERIT	CHICAGO	
	PRI.	SEC.	PRI.	SEC.	PART No.	PART No.	PART No.	PART No.	
T1	2.2KΩ	3.9Ω	230Ω Tap ② 10Ω	.9Ω	520116	A-3330 ①	A-3031 ①		① Drill one new mtg. hole

SPEAKER

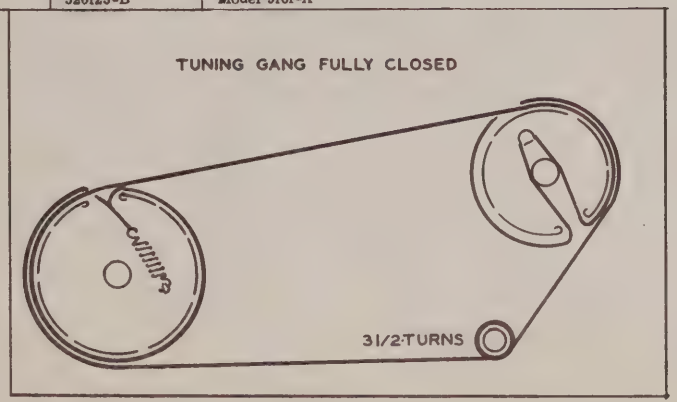
ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	Stewart-Warner PART No.	JENSEN PART No.	QUAM PART No.	
SP1A	P M	3.9Ω	C509828		4A07	
	CONE DIA.	V. C. DIA.				
SP1B	4"	9/16"				

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	Stewart-Warner PART No.	MERIT PART No.	
L1	Loop Ant.	3.4Ω		520119		
L2	Osc. Coil	.8Ω	10.2Ω	509832	*BC-397	*Drill mounting hole
L3	Input IF	17Ω	17Ω	509433	BC-352	
L4	Output IF	17Ω	17Ω	509433	BC-353	

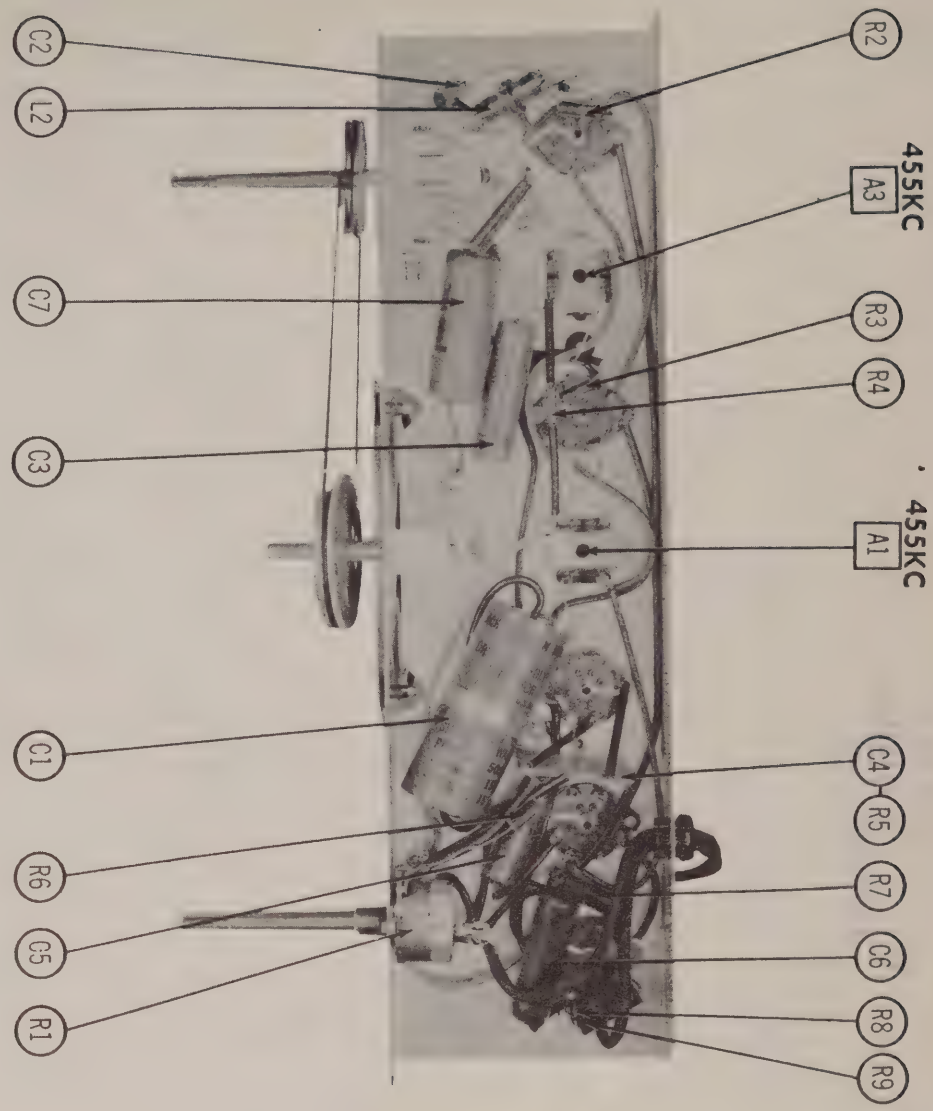
MISCELLANEOUS

ITEM No.	PART NAME	Stewart-Warner PART No.	NOTES
M1	2 Gang Var. Cap.	520117	(20-387MMF, 16-164MMF)
	Cabinet	520170-A	Model 9161-A
	Cabinet	520170-B	Model 9161-B
	Cabinet	520170-C	Model 9161-C
	Knob	520155-A	Model 9161-A
	Knob	520155-B	Model 9161-B
	Knob	520155-C	Model 9161-C
	Pointer	520123-A	Models 9161-B & 9161-C
	Pointer	520123-B	Model 9161-A



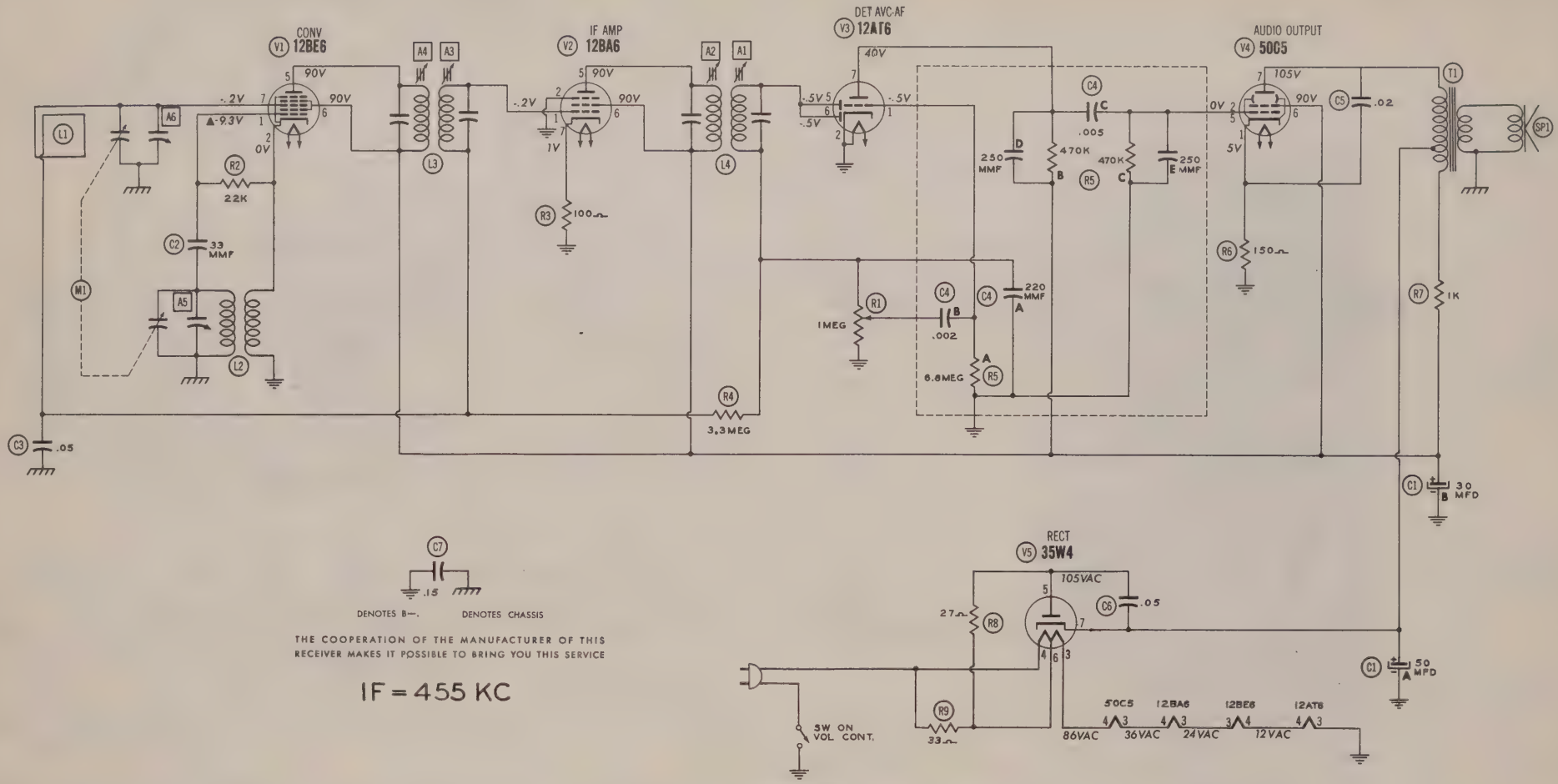
DIAL CORD DRIVE

CHASSIS—BOTTOM VIEW



STEWART-WARNER MODEL 9161-A

STEWART-WARNER MODEL 9161-A



THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE

IF = 455 KC

RESISTANCE READINGS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V 1	12BE6	22KΩ	.8Ω	24Ω	12Ω	†1KΩ	†1KΩ	4.3Meg
V 2	12BA6	4.3Meg~	0Ω	24Ω	36Ω	†1KΩ	†1KΩ	100Ω
V 3	12AT6	6.8Meg	0Ω	0Ω	12Ω	1Meg	1Meg	†470KΩ
V 4	50C5	150Ω	470KΩ	36Ω	86Ω	470KΩ	†1KΩ	†230Ω
V 5	35W4	60KΩ	†10Ω	86Ω	121Ω	148Ω	103Ω	60KΩ

†MEASURED FROM PIN 7 OF V5
▲ TAKEN WITH VACUUM TUBE VOLTMETER

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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170-12

1. DC Voltage measurements are at 20,000 ohms per volt; AC Voltages measured at 1,000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ± 10% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

PHOTOFACT* Folder

STROMBERG-CARLSON
MODELS 421CDM, 421CM, 421TX

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MODEL 421CM

STROMBERG-CARLSON
MODELS 421CDM, 421CM, 421TX

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DATE 6-52 SET 170 FOLDER 13

STROMBERG-CARLSON
MODELS 421CDM, 421CM, 421TX

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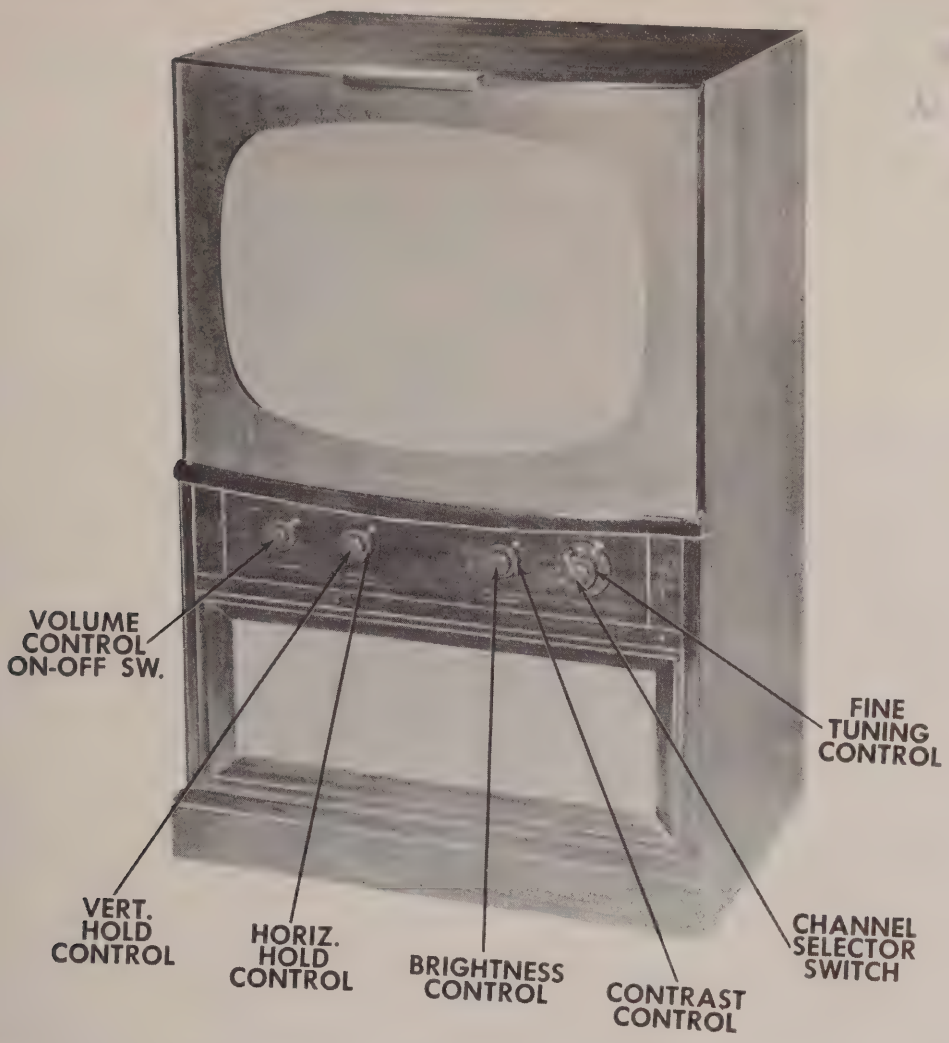

STROMBERG-CARLSON
MODELS 421CDM, 421CM, 421TX

STROMBERG-CARLSON 421CM

TRADE NAME	Stromberg-Carlson Models 421CM, 421CDM, 421TX
MANUFACTURER	Stromberg-Carlson Co., 100 Carlson Rd., Rochester 3, N.Y.
TYPE SET	Television Receiver
TUBES	Twenty-Three
POWER SUPPLY	110-120 Volts AC-60-Cycle RATING 2.4 Amp. @ 117 volts AC
TUNING RANGE	Channels 2 thru 13

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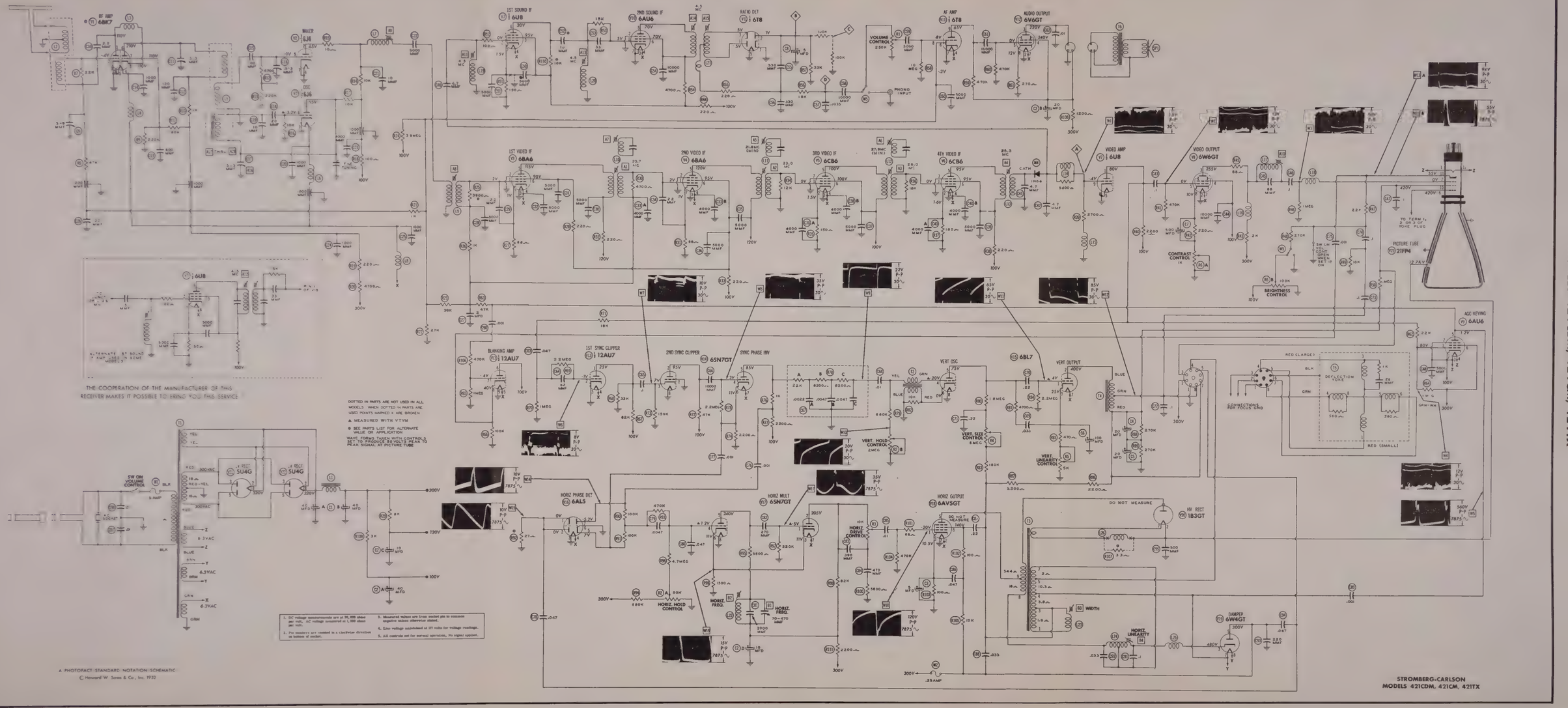
RF AMP V1 6BK7
MIXER V2 6J8
OSC V3 6J6
1ST SOUND IF V7 6U8
2ND SOUND IF V8 6AU6
RATIO DET V10 6T8
AF AMP V11 6T8
AUDIO OUTPUT V12 6V6GT
VOLUME CONTROL 250K
PHONO INPUT
1ST VIDEO IF V5 6BA6
2ND VIDEO IF V6 6BA6
3RD VIDEO IF V9 6CB6
4TH VIDEO IF V4 6CB6
VIDEO AMP V7 6U8
VIDEO OUTPUT V18 6W6GT
CONTRAST CONTROL 1K
BRIGHTNESS CONTROL 100K
PICTURE TUBE V22 21FP4
TO TERM 1, 2 OR 3 OF YOKE PLUG
ACC KEYING V9 6AU6
BLANKING AMP V11 12AU7
1ST SYNC CLIPPER V13 12AU7
2ND SYNC CLIPPER V10 6SN7GT
SYNC PHASE INV
VERT OSC
VERT OUTPUT V15 6BL7
VERT. SIZE CONTROL 6 MEG
VERT LINEARITY CONTROL 5K
DEFLECTION YOKE
CONNECTIONS FOR FOCUS GRID
HORIZ PHASE DET V19 6AL5
HORIZ MULT V17 6SN7GT
HORIZ OUTPUT V20 6AV5GT
HORIZ. FREQ.
HORIZ. HOLD CONTROL
HORIZ. FREQ. 70-670 MMF
HORIZ. LINEARITY
WIDTH
DAMPER V19 6W4GT
HV RECT V20 1B3GT
DO NOT MEASURE
SW ON VOLUME CONTROL
V RECT V21 5U4G
V RECT V22 5U4G
ALTERNATE 21" SOLID STATE YOKE
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
DOTTED IN PARTS ARE NOT USED IN ALL MODELS. WHEN DOTTED IN PARTS ARE USED POINTS MARKED X ARE BROKEN
▲ MEASURED WITH VTVM
● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
WAVE FORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK TO PEAK SIGNAL AT PICTURE TUBE
1. DC voltage measurements are at 20,000 ohms per volt, AC voltage measured at 1,000 ohms per volt.
2. Pin numbers are counted in a clockwise direction as bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation, No signal applied.
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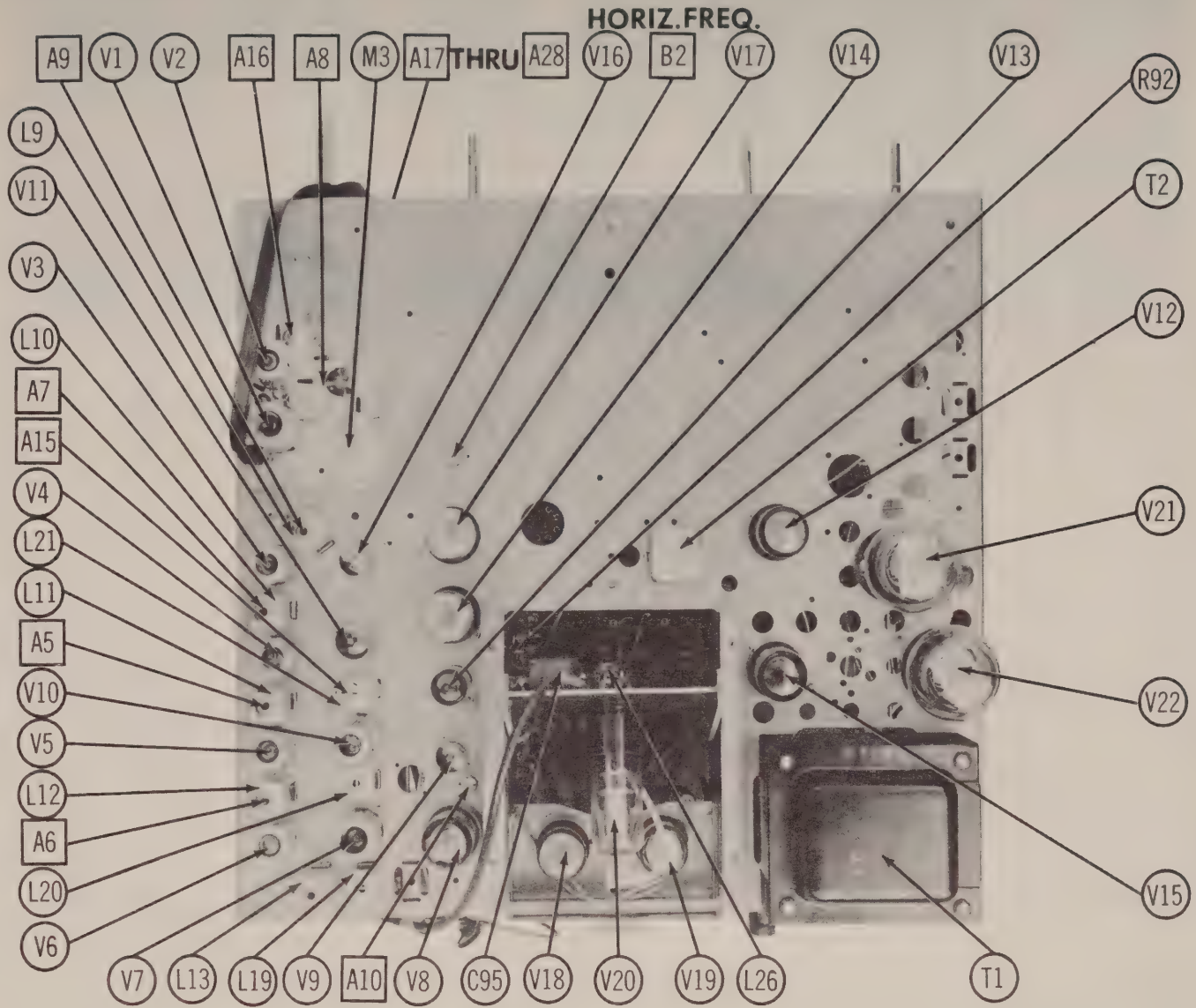
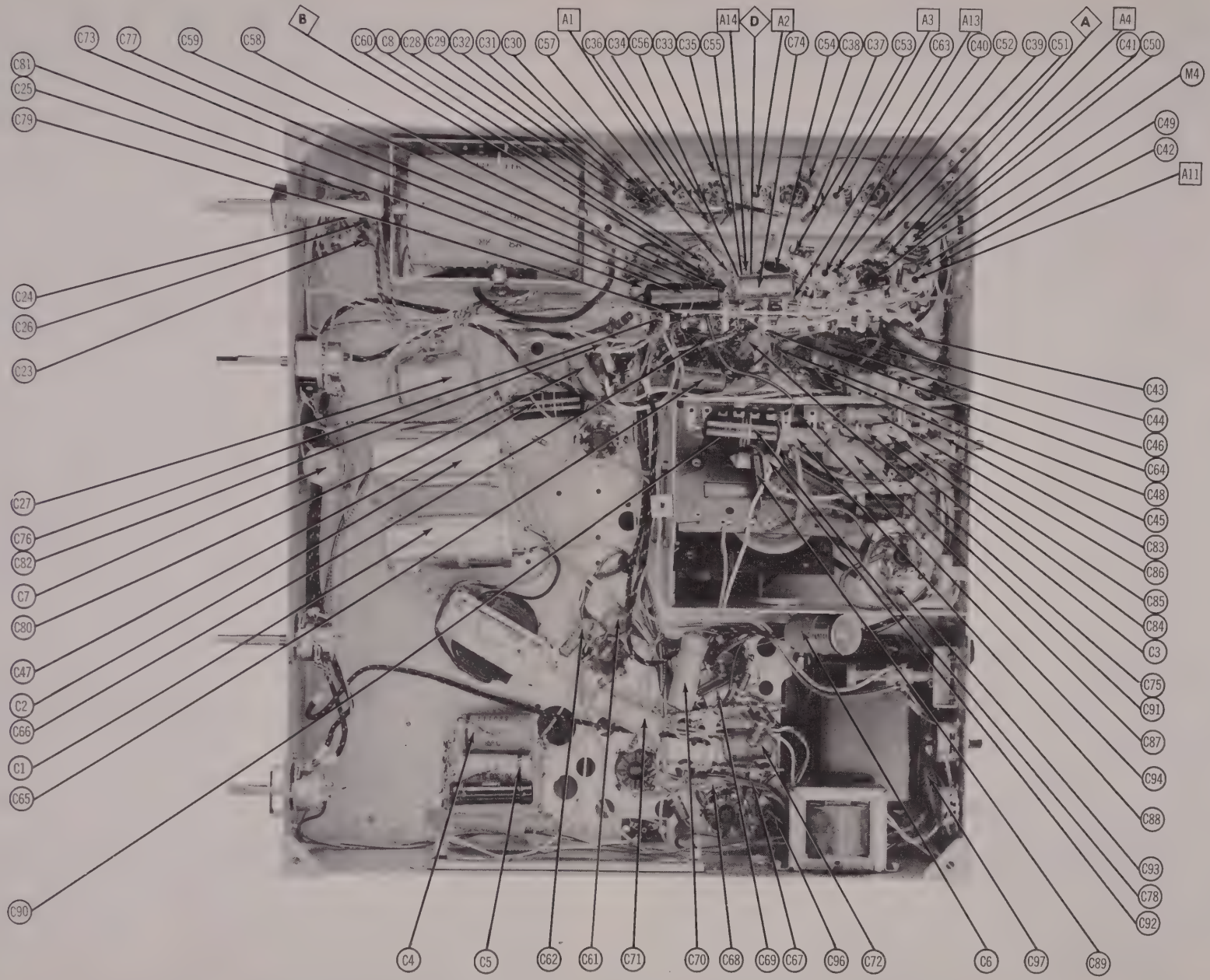


CHASSIS TOP VIEW

PROPERTY OF
L. F.
3924 MEADE
DENVER,



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

PROPERTY OF
L. V. BLANKENSHIP
3224 MEADE ST.
DENVER, COLORADO

TOP VIEW

BOTTOM VIEW

TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

If the picture tube is removed during alignment, the high voltage lead should be securely taped and kept away from the chassis.

VIDEO IF ALIGNMENT

Remove the converter tube, V2, from its socket and replace with 6J6 which has had pin 1 removed.
This will disable the local oscillator and reduce the possibility of erroneous indications.
Connect the negative lead of a 3 volt battery to the ungrounded side of C27. Connect the positive lead to chassis. During Video IF Alignment attenuate generator output to maintain 2 volt peak to peak response.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	100MMF	High side to pin 1 (grid) of 6BA6 (V3). Low side to chassis.	Not used	23.7MC (unmod.)	Any	Use VTVM DC probe to Point (A). Common to chassis.	A1	Adjust for maximum deflection
2.	"	"	"	23.0MC	"	"	A2	"
3.	"	"	"	26.0MC	"	"	A3	"
4.	"	"	"	25.3MC	"	"	A4	"
5.	"	"	"	21.9MC	"	"	A5	Adjust A5 for MINIMUM deflection.
6.	"	"	"	27.9MC	"	"	A6	"
7.	"	"	24 MC (10 MC Swp)	Approx. 21.6MC	"	Vert. amp thru 47KΩ to point (A). Low side to chassis.	A7	Adjust reactance trap, A7 for dip in response curve as per fig. 1
8.	"	"	24MC (10MC swp.)	22.7MC 26.4MC	"	"		Check for response curve similar to Fig. 2 with 22.7 & 26.4 MC at 70%. If necessary retouch A1 through A4 for proper response, then check A5, A6 & A7 for any change.
9.	Direct	High side to an ungrounded tube shield floating over dummy converter tube (V2). Low side to chassis.	"	"	"	"	A8, A9	Adjust for response curve similar to Fig. 3 with markers at 50%.

4.5MC TRAP ADJUSTMENT

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10.	100MMF	High side to Point (A). Low side to chassis.	Not used	4.5MC (400∿ mod.)	Any	Vert. amp. thru detector probe (fig.4) to pin 2 of picture tube. Low side to chassis.	A10	Adjust for MINIMUM 400∿ indication on scope.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

Connect two matched 100KΩ (±1%) resistors in series from Point (B) to chassis. The junction of these two resistors is alignment Point (C) as shown on the schematic.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
11.	100MMF	High side to pin 2 (grid) of 6U8 (V7). Low side to chassis.	4.5MC (unmod.)	Any	DC probe to Point (C). Common to chassis.	A11, A12 A13, A14	Adjust for Maximum deflection. (A12 is not used in some models
12.	"	"	"	"	DC probe to Point (D). Common to Point (C)	A15	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
11.	100MMF	High side to pin 2 (grid) of 6U8 (V7). Low side to chassis.	4.5MC (450KC swp.	4.5MC	Any	Vert. amp. to Point (B). Low side to chassis.	A11, A12 A13, A14	Disconnect stabilizor capacitor C8. Adjust for maximum amplitude and symmetry as per Fig. 5. (A12 is not used in some models)
12.	"	"	"	"	"	Vert. amp. to Point (D). Low side to chassis.	A15	Reconnect capacitor C8. Adjust A15 so that 4.5MC occurs at center of crossover lines as per Fig. 6. SLIGHTLY retouch A14 for maximum amplitude and straightness of crossover lines.

FIG.1

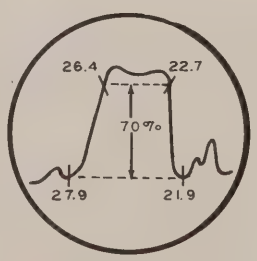


FIG. 2

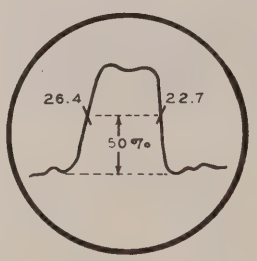


FIG. 3

ALIGNMENT INSTRUCTIONS (CONT.)

OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket.
Complete oscillator alignment may not be necessary.
If the oscillator seems to be off frequency approximately the same amount for a majority of the channels it may be possible to correct them in one step using A16. It should be noted that this is an all channel oscillator circuit adjustment and should not be used to correct for any single channel.
If adjustment of A16 will not bring all channels well within the range of the fine tuning control it will be necessary to adjust the channel strip adjustment for each channel that is off frequency. The channel adjustment screws are reached through a hole just to the right of the channel switch shaft. The correct adjustment screw is accessible through this hole as the channel switch is turned to each channel.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
13.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC swp.)	211.25MC 215.75MC	13	Vert. amp. to Point (A) Low side to chassis.	A17	Adjust to place sound marker in trap notch of response curve and video marker at 50% of response as per Fig. 7.
			207MC (10MC swp.)	205.25MC 209.75MC	12		A18	
			201MC (10MC swp.)	199.25MC 203.75MC	11		A19	
			195MC (10MC swp.)	193.25MC 197.75MC	10		A20	
			189MC (10MC swp.)	187.25MC 191.75MC	9		A21	
			183MC (10MC swp.)	181.25MC 185.75MC	8		A22	
			177MC (10MC swp.)	175.25MC 179.75MC	7		A23	
			85MC (10MC swp.)	83.25MC 87.75MC	6		A24	
			79MC (10MC swp.)	77.25MC 81.75MC	5		A25	
			69MC (10MC swp.)	67.25MC 71.75MC	4		A26	
			63MC (10MC swp.)	61.25MC 65.75MC	3		A27	
			57MC (10MC swp.)	55.25MC 59.75MC	2		A28	

THE RF PROTION OF THIS RECEIVER HAS BEEN PROPERLY ALIGNED AT THE FACTORY AND IS VERY STABLE. ALIGNMENT SHOULD NOT BE ATTEMPTED IN THE FIELD.

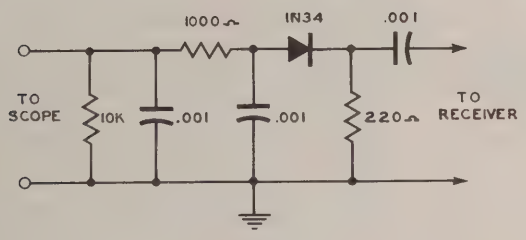


FIG. 4

FIG. 5

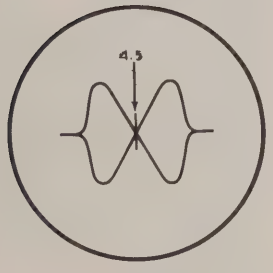


FIG. 6

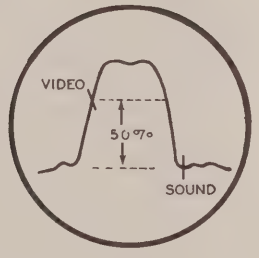
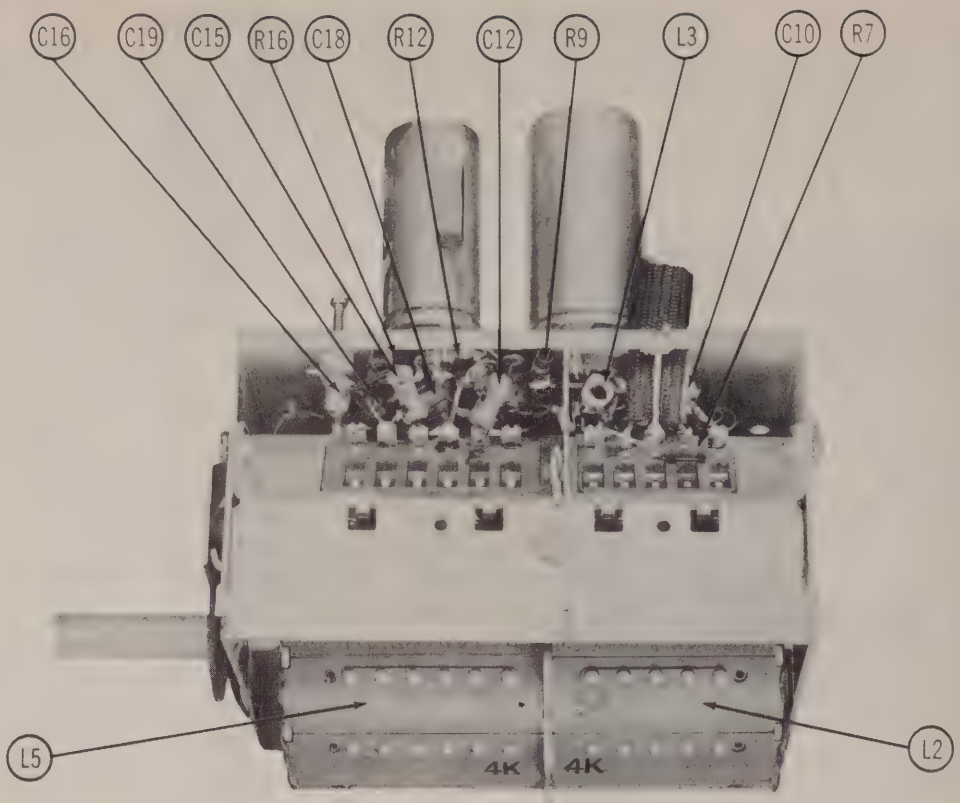


FIG. 7

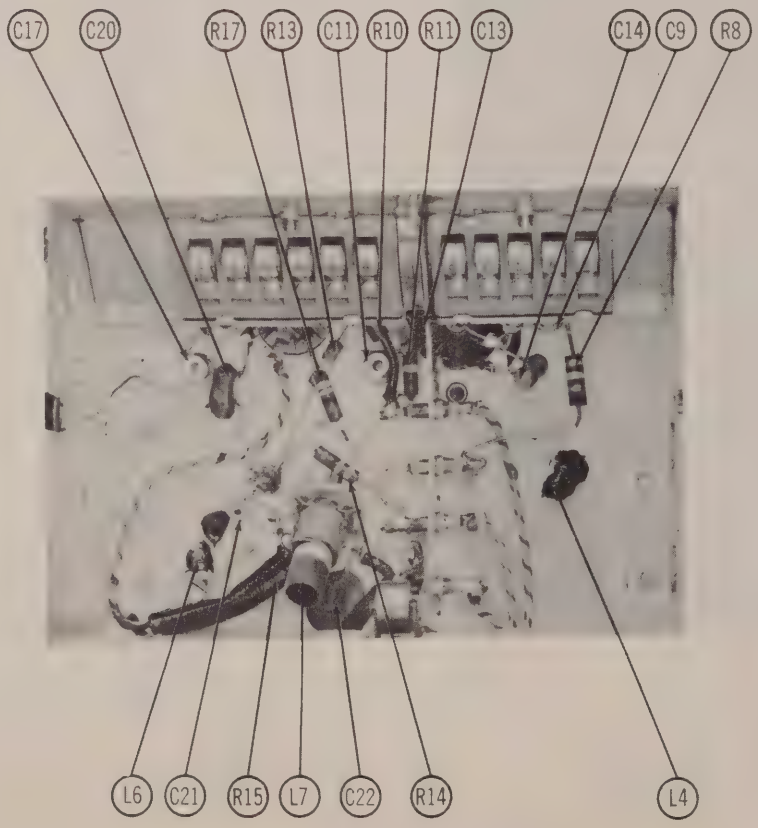
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BK7	INF	75KΩ	0Ω	.2Ω	0Ω	†6KΩ	110KΩ	INF	0Ω
V 2	6J6	†13KΩ	†13KΩ	.2Ω	0Ω	220KΩ	10KΩ	0Ω		
V 3	6BA6	67KΩ	0Ω	0Ω	.1Ω	†8.3KΩ	†3.5KΩ	68Ω		
V 4	6BA6	66KΩ	0Ω	0Ω	.1Ω	†8.1KΩ	†3.3KΩ	68Ω		
V 5	6CB6	1.1Ω	150Ω	0Ω	.1Ω	†3.1KΩ	†3.1KΩ	0Ω		
V 6	6CB6	.8Ω	180Ω	0Ω	.1Ω	†3.3KΩ	†3.3KΩ	0Ω		
V 7	6U8	†5.3KΩ	103Ω	†3.3KΩ	.1Ω	0Ω	†13KΩ	150Ω	0Ω	2.7KΩ
V 8	6W6GT	0Ω	0Ω	†2.1KΩ	†3.1KΩ	470KΩ	#1Meg	.1Ω	400Ω	
V 9	6AU6	†27KΩ	†3.1KΩ	■0Ω	■.2Ω	110KΩ	†65Ω	†3.1KΩ		
V 10	6AU6	15KΩ	0Ω	0Ω	.1Ω	†7.3KΩ	†7.3KΩ	0Ω		
V 11	6T8	INF	33KΩ	INF	.1Ω	0Ω	27KΩ	0Ω	10Meg	†470KΩ
V 12	6V6GT	0Ω	0Ω	†1.7KΩ	†1.3KΩ	470KΩ	†470KΩ	.1Ω	270Ω	
V 13	12AU7	25KΩ	3.2Meg	0Ω	.1Ω	.1Ω	†3.1KΩ	1Meg	100KΩ	0Ω
V 14	6SN7GT	0Ω	†50KΩ	150KΩ	2.2Meg	†6.3KΩ	2.2KΩ	.1Ω	0Ω	
V 15	6BL7GT	2.2Meg	#5.7KΩ	1.5KΩ	1.8Meg	#5Meg	170Ω	.1Ω	0Ω	
V 16	6AL5	27Ω	27Ω	0Ω	.1Ω	5.2Meg	0Ω	5.2Meg		
V 17	6SN7GT	220KΩ	†82KΩ	1.5KΩ	4.7Meg	†8KΩ	1.5KΩ	.1Ω	0Ω	
V 18	6AV5GT	470KΩ	.1Ω	100Ω	INF	#23Ω	INF	0Ω	†15KΩ	
V 19	6W4GT	INF	INF	INF	INF	†65Ω	†65Ω	#16Ω	#16Ω	
V 20	1B3GT	PINS 1 THRU 8 HAVE INF RESISTANCE								TOP CAP #583Ω
V 21	5U4G	INF	30KΩ	†4.7KΩ	18Ω	INF	18Ω	INF	30KΩ	
V 22	5U4G	INF	30KΩ	INF	18Ω	INF	18Ω	INF	30KΩ	
V 23	21FP4	■.2Ω	1Meg	PIN 6 #1Meg	PIN 10 #1Meg	PIN 11 300KΩ	PIN 12 ■0Ω			

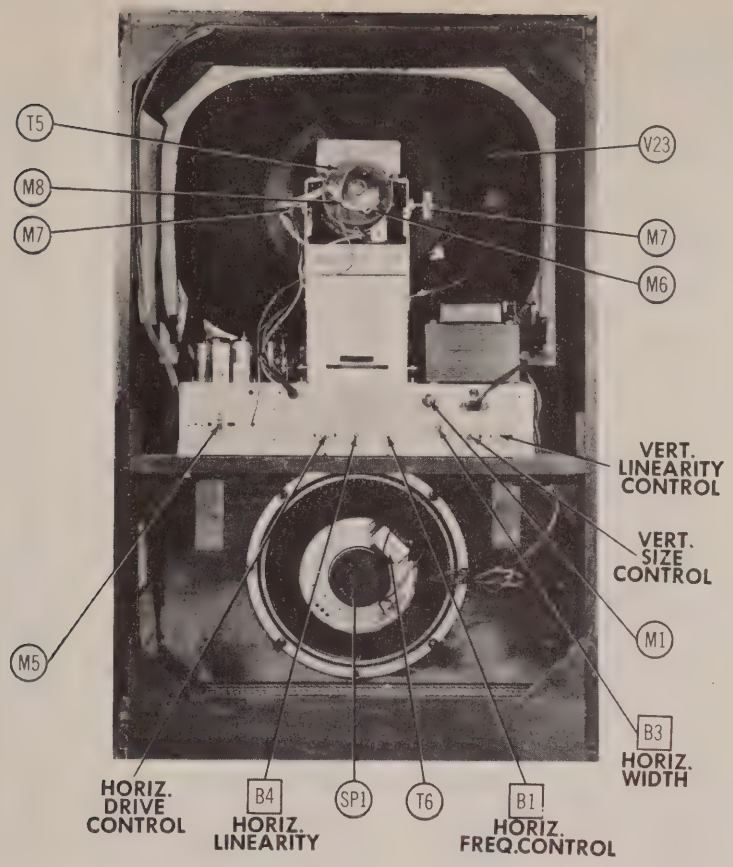
ALL CONTROLS SET FOR NORMAL OPERATION, NO SIGNAL APPLIED
† MEASURED FROM PINS 8 OF V21 & V22
# MEASURED FROM PIN 3 OF V19
■ MEASURED FROM 100VDC LINE



RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern. Set the horizontal hold control at the mid-position of it's range and adjust the horizontal frequency trimmer, (B1) until the picture synchronizes horizontally.

If adjustment of B1 will not synchronize the picture set B1 in the middle of its range and adjust the horizontal frequency slug, (B2).

Adjust the horizontal drive control for best compromise between brightness and horizontal linearity.

Adjust the horizontal size slug, (B3) to give a picture slightly wider than the picture mask.

Adjust the horizontal linearity slug, (B4) for a symmetrical picture from left to right.

ADJUSTMENTS FOR ELECTROSTATIC FOCUS

Adjust the Ion trap in normal manner where maximum brightness and in-focus-picture can be obtained

Better focus can be obtained if the centering magnet is placed away from the Ion trap and up close to the deflection yoke, and keeping the two magnets on opposite sides of the picture tube.

Proper connection of the focusing anode is made at the Factory. When picture tube is replaced the anode should be tried at one of three points. ① Ground, ② B+, ③ Boosted DC, as shown on deflection yoke plug for the best picture focus.

DISASSEMBLY INSTRUCTIONS

1. Remove 6 push on type control knobs from front panel. Loosen 2 set screws to remove channel selector knob.
2. Remove transmission line and built-in antenna from rear cover.
3. Remove 9 wood and 1 metal screw from rear cover. Remove rear cover.
4. Disconnect speaker plug from top side of chassis.
5. Remove 4 nuts holding speaker. Remove speaker.
6. Remove 5 chassis bolts. Remove chassis.

NOTE: FOR PICTURE TUBE REMOVAL IT IS NECESSARY TO REMOVE CHASSIS AS OUTLINED ABOVE.

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No.	USE	REPLACEMENT DATA: Stromberg Carlson PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1A	RF Amplifier	6BK7	6BK7	9AJ	
V1B	RF Amplifier	6BQ7	6BQ7	9AJ	
V2	Converter	6Z6	6Z6	7BP	
V3	1st. Video IF Amp.	6BA6	6BA6	7BK	
V4	2nd. Video IF Amp.	6BA6	6BA6	7BK	
V5	3rd. Video IF Amp.	6CB6	6CB6	7CH	
V6	4th. Video IF Amp.	6CB6	6CB6	7CH	
V7	Video Amplifier - 1st. Sound IF Amp.	6U8	6U8	9-AE	
V8	Video Output	6W6GT	6W6GT	7AC	
V9	Keyed AGC	6AU6	6AU6	7BK	
V10	2nd. Sound IF Amp	6AU6	6AU6	7BK	
V11	Ratio Detector - AF Amplifier - AGC Clamper	6T8	6T8	9E	
V12	Audio Output	6V6GT	6V6GT	7AC	
V13	Blanking Amp. 1st Sync Clipper	12AU7	12AU7	9A	
V14	2nd. Sync Clipper - Sync. Phase Inv	6SN7GT	6SN7GT	8BD	
V15	Vert. Oscillator - Vert. Output	6BL7GT	6BL7GT	8BD	
V16	Horiz. Phase Det.	6AL5	6AL5	6BT	
V17	Horiz. Multi.	6SN7GT	6SN7GT	8BD	
V18	Horiz. Output	6AV5GT	6AV5GT	6CK	
V19	Damper	6W4GT	6W4GT	4CG	
V20	HV Rectifier	1B3GT	1B3GT	3C	
V21	LV Rectifier	5U4G	5U4G	5T	
V22	LV Rectifier	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No.	REPLACEMENT DATA: Stromberg-Carlson PART No.	REPLACEMENT DATA: SYLVANIA PART No.	RTMA BASE TYPE	NOTES
V23	21FP4	21FP4 21FP4A ①	12L 12L	① Outer coating must be grounded

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: Stromberg Carlson PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	450	111095	AFH2-57		UPT4445		TVL-2764	▲ Filter
B	40	450							▲ Filter
C2A	40	450	111094	AFH4-18		UPT42II45		TVL-4840	▲ Decoupling
B	20	450							▲ Audio Output Dec.
C	10	450							▲ Decoupling
D	10	450							Horiz. MV Decoupling
C3	5	50	111047	PRS150-4		BR550		TVA-1303	Horiz. Output Cathode
C4	20	300	111089	PRS450-420		BR2035A		TVA-1608	Vert. Output Dec.
C5	20	300	111089	PRS450-420		BR2035A		TVA-1608	Vert. Output Dec.
C6	100	50	111097	PRS50-100		BR550		TVA-1301	Vert. Output Cathode
C7	500	12	111062	PRS12/500		BRH125A		TVA-1132	Video Output Cathode
C8	5	50	111047	PRS150-4		BR550		TVA-1303	Stabilizing Cap.
C9	3-9		171213		829-10				Variable Trimmer
C10	2.2		110439		TCZ-2.2		NP0K-2R2		Neutralizing Cap.
C11	5-3		171212		829-3				Variable Trimmer
C12	120		171216	SU20	D6-121	TM5T12	GP2K-121	5GA-T12	RF Amp. Plate Dec.
C13	800		171217	BPD-0008	DD-801	TM5T8	801-001	5HK-D1	RF Amp. Grid Dec.
C14	1000		110599	SU000	D6-102	TM5D1	GP2L-102	5HK-D1	RF Amp. Fil. Bypass
C15	100		110401	SU00	D6-101	TM5T1	GP1K-101	5GA-T1	RF Coupling
C16	5-3		171212		829-3				Variable Trimmer
C17	5-3		171212		829-3				Variable Trimmer
C18	20		171215	SU20NP0	TCZ-20		NP0K-200		Osc. Grid Cap.
C19	10		171222	SU10N750	TCN-10		N750K-100	5TCU-Q1	Fixed Trimmer
C20	1000		110599	SU000	D6-102	TM5D1	GP2L-102	5HK-D1	Conv. Fil. Bypass
C21	10		171214	SU10NP0	TCZ-10		NP0K-100	5TCC-Q1	Fixed Trimmer
C22	5000		110586	BPD-005	DD-502	TM5D5	811-005	5HK-D5	IF Coupling
C23	1000		110050	SU000	D6-102	TM5D1	GP2L-102	50IC-1000	RF Bypass
C24	1000		110050	SU000	D6-102	TM5D1	GP2L-102	50IC-1000	RF Bypass
C25	1000		110050	SU000	D6-102	TM5D1	GP2L-102	50IC-1000	Fil. Bypass
C26	1000		110050	SU000	D6-102	TM5D1	GP2L-102	50IC-1000	AGC Filter
C27	2	50			TCZ-2.2		NP0K-2R2		AGC Filter
C28	5000		110586	BPD-005	DD-502	TM5D5	811-005	5HK-D5	AGC Filter
C29	2.2		110439		TCZ-2.2		NP0K-2R2		Neutralizing Cap.
C30	5000		110586	BPD-005	DD-502	TM5D5	811-005	5HK-D5	1st. Video IF Plate
C31	5000		110586	BPD-005	DD-502	TM5D5	811-005	5HK-D5	1st. Video IF Screen
C32	5000		110586	BPD-005	DD-502	TM5D5	811-005	5HK-D5	1st. Video IF Fil.
C33A	4000		110685	BPD-2X004	D6-402	TM5DD4	822-004	5HK-2D4	AGC Filter
B	4000				D6-402				2nd. Video IF Fil.
C34	2.2		110439		TCZ-2.2		NP0K-2R2		Neutralizing Cap.
C35	5000		110586	BPD-005	DD-502	TM5D5	811-005	5HK-D5	2nd. Video IF Plate
C36	5000		110586	BPD-005	DD-502	TM5D5	811-005	5HK-D5	2nd. Video IF Screen
C37	5000		110586	BPD-005	DD-502	TM5D5	811-005	5HK-D5	3rd. Video IF Dec.
C38A	4000		110685	BPD-2X004	D6-402	TM5DD4	822-004	5HK-2D4	3rd. Video IF Cathode
B	4000				D6-402				3rd. Video IF Fil.
C39	5000		110586	BPD-005	DD-502	TM5D5	811-005	5HK-D5	4th. Video IF Dec.
C40A	4000		110685	BPD-2X004	D6-402	TM5DD4	822-004	5HK-2D4	4th. Video IF Cathode
B	4000				D6-402				4th. Video IF Fil.
C41	4.7		110598	SI5NP0	TCZ-4.7		NP0K-4R7		Fixed Trimmer
C42	4.7		110598	SI5NP0	TCZ-4.7		NP0K-4R7		Video Det. Filter
C43	1	400	110724	P488-1	DF-104	PTE4P1		4TM-P1	Video Coupling
C44	10000		110672	BPD-01	DD-103	TM5S1	821-01	5HK-S1	Video Output Screen
C45	68				TCZ-68		NP0-333-680	5TCC-Q68	Fixed Trimmer
C46	.1	400	110724	P488-1	DF-104	PTE4P1		4TM-P1	Video Coupling
C47	.1	600	110743	P688-1	DF-104	PTE6P1		6TM-P1	Acc. Anode Bypass
C48	5000		110586	BPD-005	DD-502	TM5D5	811-005	5HK-D5	AGC Cathode Bypass
C49	4.7		110598	SI5NP0	TCZ-4.7		NP0K-050		Sound IF Coupling
C50	5000		110586	BPD-005	DD-502	TM5D5	811-005	5HK-D5	1st. Sound IF Dec.
C51	5000		110586	BPD-005	DD-502	TM5D5	811-005	5HK-D5	1st. Sound IF Cathode
C52	10			SU10	D6-100		GP1K-100	5GA-Q1	Sound IF Coupling *

PARTS LIST AND DESCRIPTIONS

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: Stromberg Carlson PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ERIE PART No.	SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C53	33		110486	SI33	D6-330		GP1K-330	5GA-Q33	2nd. Sound IF Grid
C54	10000		110672	BPD-01	DD-103	TM5S1	821-01	5HK-S1	2nd. Sound IF Dec.
C55	330		110454	SI330	D6-331		GP2K-331	5GA-T33	Diode Load Cap.
C56	330		110454	SI330	D6-331		GP2K-331	5GA-T33	Diode Load Cap.
C57	.0033	400	110715	P688-0033	D6-332	PTE6D33	GP2-333-332	6TM-D3	De-Emphasis
C58	10000		110672	BPD-01	DD-103	TM5S1	821-01	5HK-S1	Audio Coupling
C59	5000		110586	BPD-005	DD-502	TM5D5	811-005	5HK-D5	Audio Coupling
C60	5000		110586	BPD-005	DD-502	TM5D5	811-005	5HK-D5	AGC Filter
C61	10000		110672	BPD-01	DD-103	TM5S1	821-01	5HK-S1	Audio Coupling
C62	.01	600	110737	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Audio Output Plate
C63	.047	400	110722	P488-047	DF-503	PTE4S47		4TM-S47	Sync. Coupling
C64	82		110596	SI82	D6-820		GP1K-820		Sync. Coupling
C65	.1	400	110724	P488-1	DF-104	PTE4P1		4TM-P1	Sync. Coupling
C66	10000		110672	BPD-01	DD-103	TM5S1	821-01	5HK-S1	Sync. Coupling
C67A	.0022			P688-0022		PTE6D22	GP2-333-222		Vert. Integrator Net.
B	.0047		◆128200	P688-0047	♦PC-100	PTE6D47	GP2-333-472	♦101C1	Vert. Integrator Net.
C	.0047			P688-0047		PTE6D47	GP2-333-472		Vert. Integrator Net.
C68	.01	400	110718	P488-01		PTE4S1	GP2-333-103	4TM-S1	Vert. Osc. Grid Cap.
C69	.033	800	110740	P888-033	D6-103				Vert. Discharge
C70	.22	600	110745	684-25		PTE6P25		6TM-P25	Vert. Sweep Coupling
C71	.22	800	110745	684-25		PTE6P25		6TM-P25	RF Bypass
C72	.1	800	110743	P888-1	DF-104	PTE6P1		6TM-P1	Integrator Net.
C73	.1	800	110743	P888-1	DF-104	PTE6P1		6TM-P1	Vert. Sweep Coupling
C74	.1	400	110724	P488-1	DF-104	PTE4P1		4TM-P1	Vert. Sweep Coupling
C75	.001	400	110712	P488-001	D6-102	PTE4D1	GP2L-102	6TM-D1	Blanking Net.
C76	.001	800	110712	P888-001	D6-102	PTE6D1	GP2L-102	6TM-D1	Horiz. Sync. Coupling
C77	.001	800	110712	P888-001	D6-102	PTE6D1	GP2L-102	6TM-D1	Horiz. Sync. Coupling
C78	.047	1000	110760	P1088-047		PTE10S5		MB-S5	Horiz. Feedback
C79	.0047	400	110716	P688-0047	D6-472	PTE6D47	GP2-333-472	6TM-D47	Horiz. AFC Filter
C80	.047	400	110722	P488-047	DF-503	PTE4S47		4TM-S47	Horiz. AFC Filter
C81	3900	500	110309	1464-004		1DR5D4			Fixed Trimmer
C82	270	500	110208	1469-0003		5R5T3		MS-33	Horiz. MV Feedback
C83	390	500	110262	1469-0004		5R5T4		MS-34	Horiz. Discharge
C84	470	500	110209	1469-0005		5R5T5		MS-35	Horiz. Discharge
C85	.01	600	110737	P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Horiz. Sweep Coupling
C86	.047	400	110722	P488-047	DF-503	PTE4S47		4TM-S47	Horiz. Output Screen
C87	.33	400	110726	P488-22		PTE4P22		4TM-P22	Horiz. Feedback
C88	.033	400	110731	P488-033					Voltage Divider
C89	.001	1000	110750	P1088-001		PTE16D1		MB-D1	Horiz. Feedback
C90	.001	600	110712	P688-001	D6-102	PTE6D1	GP2L-102	6TM-D1	Blanking Coupling
C91	.1	400	110724	P488-1		PTE4P1		4TM-P1	Damper Filter
C92	.033	400	110721	P488-033					Damper Filter
C93	220	500	110207	1469-00025		5R5T25			Damper Plate
C94	.047	400	110722	P488-047		PTE4S47		4TM-S47	Horiz. Sweep Coupling
C95	500	20000	110680	HV20A	TV1-502	MM-A20T5			HV Filter
C96	.01	600	110568	689ZGXY-01		PJ6S1		6TM-S1	Line Filter
C97	.01	600	110568	689ZGXY-01		PJ6S1		6TM-S1	Line Filter

* Not used in all models

♦ Items C67A, C67B, C67C, R78A, R78B, R78C are combined in one unit.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: Stromberg Carlson PART No.	IRC PART No.	CLAROSTAT PART No.	CENTRALAB PART No.	INSTALLATION NOTES
R1A	250KΩ	½	145142	Q13-130	AG-64-Z	B-51-S	Volume Control
B	Shaft		Not Req.	Not Req.	FS-2	Not Req.	Attach to R1A per instructions
C	Switch		Not Req.	76-2	SWB-2	Not Req.	Attach to R1A per instructions
R2A	50K	½	145128	QJ-69 *	RTV-75		Horiz. Hold Control - Panel
B	2Meg	½					Vert. Hold Control - Rear
R3A	10KΩ	½	145132	Q11-116	AG-27-S	AN-14	Horiz. Drive Control
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Attach to R3A per instructions
R4A	5Meg	½	145100		AM-66-S		Vert. Size Control
B	Shaft		Not Req.		FKS-1/4		Attach to R4A per instructions
R5A	5000Ω	½	145079	Q11-114	AG-19-S	AN-10	Vert. Linearity Control
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Attach to R5A per instructions
R6A	1000Ω	2	145140				Contrast Control - Wire Wound - Panel
B	100KΩ	½					Brightness Control - Rear

* CONCENTRIKIT EQUIVALENT - Kit K-2, BASE ELEMENT - B11-123 & P1-112 (Panel), B11-139 & R2-131 (Rear).

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: Stromberg Carlson PART No.	IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ± 10% UNLESS OTHERWISE NOTED
R7	22KΩ	½	149109		Antenna Coil Shunt
R8	47KΩ 20%	½	149111		1st. RF Amp. Grid
R9	220KΩ 20%	½	149115	BTS-220K	2nd. RF Amp. Grid
R10	1000Ω 20%	½	149101	BTS-1000	2nd. RF Amp. Plate Decoupling
R11	180KΩ	½	28182		Voltage Divider
R12	4700	½	28166	BTS-4700	Mixer Grid
R13	220KΩ 20%	½	149115	BTS-220K	Mixer Grid
R14	10KΩ	½	149107		Mixer Plate
R15	10Ω	½	149089		Parasitic Suppressor
R16	10KΩ	½	28170		Osc. Grid
R17	10KΩ	½	28170		Osc. Plate
R18	100Ω 20%	½	149095	BTS-100	Decoupling
R19	220Ω 20%	½	149097	BTS-220	Decoupling
R20	4700Ω	2	149080	BTS-4700	Decoupling
R21	1000Ω 20%	½	149101	BTS-1000	AGC Network
R22	27KΩ	½		BTS-27K	AGC Network
R23	39KΩ	½	28176	BTS-39K	AGC Network
R24	3.9Meg	½		BTS-3.9Meg	AGC Network
R25	3900Ω	½	28165	BTS-3900	1st. Video IF Coil Shunt See Note 4.
R26	1000Ω 20%	½	149101	BTS-1000	AGC Network
R27	68Ω	½	28144		1st. Video IF Amp. Cathode
R28	220Ω 20%	½	149097	BTS-220	1st. Video IF Amp. Screen
R29	8000Ω	10	149231	1 3/4A-8000	Decoupling - Wire Wound
R30	4700Ω	½	28166	BTS-4700	2nd. Video IF Coil Shunt
R31	68Ω	½	28144		2nd. Video IF Amp. Cathode
R32	220Ω 20%	½	149097	BTS-220	Decoupling
R33	220Ω 20%	½	149097	BTS-220	2nd. Video IF Amp. Screen
R34	12KΩ	½	28171		3rd. Video IF Coil Shunt
R35	150Ω 20%	½	149096	BTS-150	3rd. Video IF Amp. Cathode
R36	18KΩ	½	28173		4th. Video IF Coil Shunt
R37	180Ω	½	28149	BTS-180	4th. Video IF Amp. Cathode

RESISTORS (CONT.)

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: Stromberg Carlson PART No.	IRC PART No.	IDENTIFICATION CODES
R38	220Ω 20%	½	149097	BTS-220	4th. Video IF Amp. Decoupling
R39	2700Ω	½	28163	BTS-2700	1st. Video Amp. Grid
R40	2200Ω	½	28162	BTS-2200	1st. Video Amp. Plate
R41	470KΩ 20%	½	149117	BTS-470K	Video Output Grid
R42	220Ω 20%	½	149097	BTS-220	Video Output Cathode
R43	2000Ω	7	149411	1 3/4A-2000	Video Output Plate - Wire Wound
R44	220Ω 20%	½	149097	BTS-220	Decoupling
R45	68Ω	½	28144		Parasitic Suppressor
R46	1Meg 20%	½	149119	BTS-1Meg	Picture Tube Grid
R47	22KΩ	½	149109	BTS-22K	Picture Tube Cathode
R48	270KΩ	½	28184	BTS-270K	Picture Tube Cathode
R49	10KΩ 20%	½	149107	BTS-10K	Vert. Blanking
R50	1Meg 20%	½	149111	BTS-1Meg	Filter
R51	150Ω 20%	½	149096	BTS-150	1st. Sound IF Amp. Cathode
R52	100Ω 20%	½	149095	BTS-100	Parasitic Suppressor
R53	15KΩ	½	149106		2nd. Sound IF Amp. Grid
R54	4700Ω 20%	1	149142	BTA-4700	2nd. Sound IF Amp. Decoupling
R55	220Ω 20%	½	149097	BTS-220	Balancing
R56	18KΩ	½	28173	BTS-18K	De-emphasis
R57	33KΩ 20%	½	149110	BTS-33K	Ratio Det. Diode Load
R58	10Meg 20%	½	149125	BTS-10Meg	AF Amp. Grid
R59	470KΩ 20%	½	149117	BTS-470K	AF Amp. Plate
R60	470KΩ 20%	½	149117	BTS-470K	Output Grid
R61	270Ω	1	149170	BTA-270	Output Cathode
R62	22KΩ	½	149109	BTS-22K	Keyed AGC Grid
R63	47KΩ	½	149111	BTS-47K	AGC Network
R64	1Meg	½	149119	BTS-1Meg	AGC Network
R65	1Meg 20%	½	149119	BTS-1Meg	Blanking Amp. Grid
R66	100KΩ 20%	½	149113	BTS-100K	Blanking Amp. Cathode
R67	82KΩ	½	28180	BTS-82K	Blanking Amp. Plate
R68	33KΩ 20%	½	149110	BTS-33K	1st. Sync. Clipper Plate
R69	2.2Meg 20%	½	149121	BTS-2.2Meg	1st. Sync. Clipper Grid
R70	1Meg 20%	½	149119	BTS-1Meg	1st. Sync. Clipper Grid
R71	18KΩ	½	28173	BTS-18K	Isolation
R72	47KΩ 20%	½	149111	BTS-47K	2nd. Sync. Clipper Plate
R73	150KΩ 20%	½	149114	BTS-150K	2nd. Sync. Clipper Cathode
R74	2200Ω	½	28162	BTS-2200	Phase Inv. Cathode
R75	2.2Meg	½	149121	BTS-2.2Meg	Phase Inv. Grid
R76	100Ω 20%	½	28156	BTS-1000	Phase Inv. Plate
R77	2200Ω	½	28162	BTS-2200	Phase Inv. Plate
R78A	22KΩ			BTS-22K	Integrator Network
B	8200Ω	½	♦ 128200	BTS-8200	Integrator Network
C	8200Ω			BTS-8200	Integrator Network
R79	680KΩ	½	149118	BTS-680K	Vert. Osc. Grid
R80	1.8Meg	½	28194	BTS-1.8Meg	Vert. Osc. Plate
R81	4700Ω	½	28166	BTS-4700	Vert. Peaking
R82	10KΩ 20%	½	149107	BTS-10K	Vert. Osc. Transformer Shunt
R83	180KΩ	½	28182	BTS-180K	Vert. Osc. Decoupling
R84	2.2Meg 20%	½	149121	BTS-2.2Meg	Vert. Output Grid
R85	470Ω 20%	1	149136	BTA-470	Vert. Output Cathode
R86	2200Ω	2	149078	BTB-2200	Vert. Output Decoupling
R87	2200Ω 20%	2	149078	BTB-2200	Vert. Output Decoupling
R88	270KΩ	½	28184	BTS-270K	Bleeder
R89	270KΩ	½	28184	BTS-270K	Bleeder
R90	100KΩ	½	149385	BTS-100K	Horiz. Phase Det. Diode Load
R91	100KΩ	½	149385	BTS-100K	Horiz. Phase Det. Diode Load
R92	27Ω	1	149160		Horiz. Phase Det. Diode Load - See Note 1
R93	470KΩ	½	149117	BTS-470K	Horiz. AFC Filter
R94	680KΩ 20%	½	149118	BTS-680K	Voltage Divider
R95	5600Ω	1	149184	BTA-5600	Horiz. MV Plate
R96	4.7Meg 20%	½	149123	BTS-4.7Meg	Horiz. MV Grid
R97	220KΩ 20%	½	149115	BTS-220K	Horiz. MV Grid
R98	1500Ω	½	28160	BTS-1500	Horiz. MV Cathode
R99	82KΩ	½	28180	BTS-82K	Horiz. MV Plate
R100	5600Ω	½	28167	BTS-5600	Horiz. Peaking
R101	68Ω	½	28144		Parasitic Suppressor
R102	100Ω 20%	½	149095		Parasitic Suppressor
R103	100Ω 20%	2	149070	BW-2-100	Horiz. Output Cathode
R104	470KΩ 20%	½	149117	BTS-470K	Horiz. Output Grid
R105	15KΩ	6	33912	1 3/4A-15K	Horiz. Output Screen - Wire Wound
R106	470KΩ 20%	½	149117	BTS-470K	Blanking Network
R107	3.3Ω	½	149419		HV Rectifier Filament - See Note 2
R108	1200Ω	20	149366	2D-1200	Filter - Wire Wound
R109	3000Ω	20	149377	2D-3000	Filter - Wire Wound
R110	10KΩ	½			1st. Sound IF Amp. Plate - See Note 3
R111	2200Ω	½	149078	BTS-2200	Decoupling

Note 1. Some Models use a 33KΩ Resistor in this application. Note 2. Some Models use an RF Choke in the application.
Note 3. Not used in all Models. ♦ Items R78A, R78B, R78C, C67A, C67B, C67C are combined into one unit.
Note 4. Those Models on which L9 has a dot of green paint on can, a 6800Ω Resistor is used in this application.

SPEAKER

ITEM No.	RATINGS: FIELD. RES.	RATINGS: V. C. IMP.	REPLACEMENT DATA: Stromberg Carlson PART No.	VIKING PART No.	QUAM PART No.	NOTES
SP1A	PM	3.7Ω	155189	12J12	12A4A	
	CONE DIA.	V. C. DIA.				
SP1B	12"	1"				

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: Stromberg-Carlson PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.
T1	117VAC ② 2.4A	600VCT ②.315ADC	5VAC ②6A	6.3VAC ② 9.1A SEC. 4 6.3VAC ② 1.2A SEC. 5 6.3VAC ② .9A	161429		P-3059 & P-2944①	

① Mount under chassis and use for secondary #5

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING DC RESISTANCE PRI.	RATING DC RESISTANCE SEC.	REPLACEMENT DATA Stromberg Carlson PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	NOTES
T2	170Ω	950 Ω	761254	A-8122	A-4003	TB0-2	Vert. Osc. Transformer
T3	560Ω Tapped ⓐ 16Ω	18Ω Tapped ⓐ 1.8Ω 5.7Ω, & 16Ω SEC. 2 0Ω	161049		HV0-7 ③ MWC-1		Horiz. Output Transformer
T4	1300Ω Tapped ⓐ 11Ω		161255	A-8123	A-3037	TS0-5 ②	Vert. Output Transformer
T5A	18Ω		114706	DY9.	MDF-70		Horiz. Deflection Coils
B	44Ω						Vert. Deflection Coils

② Drill one new Mtg. Hole
③ Replace original width coil with MWC-1 and use secondary of MWC-1 for AFC

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING IMPEDANCE PRI.	RATING IMPEDANCE SEC.	RATING DC RES. PRI.	RATING DC RES. SEC.	REPLACEMENT DATA Stromberg-Carlson PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
T6	12KΩ	3.7Ω	450Ω	.4Ω	161256	A-3852	A-2901	R0-303	Audio Output Transformer

FILTER CHOKE

ITEM No.	RATINGS TOTAL DIRECT CURRENT	RATINGS D. C. RESISTANCE	RATINGS INDUCTANCE (0 CURRENT 1000 ~)	REPLACEMENT DATA Stromberg-Carlson PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	INSTALLATION NOTES
L1	.315A	60Ω	2.5H	161030	C-2326 ①	C-2996	TR-330①	Filter Choke

① Drill one new mounting hole

COILS (RF-IF)

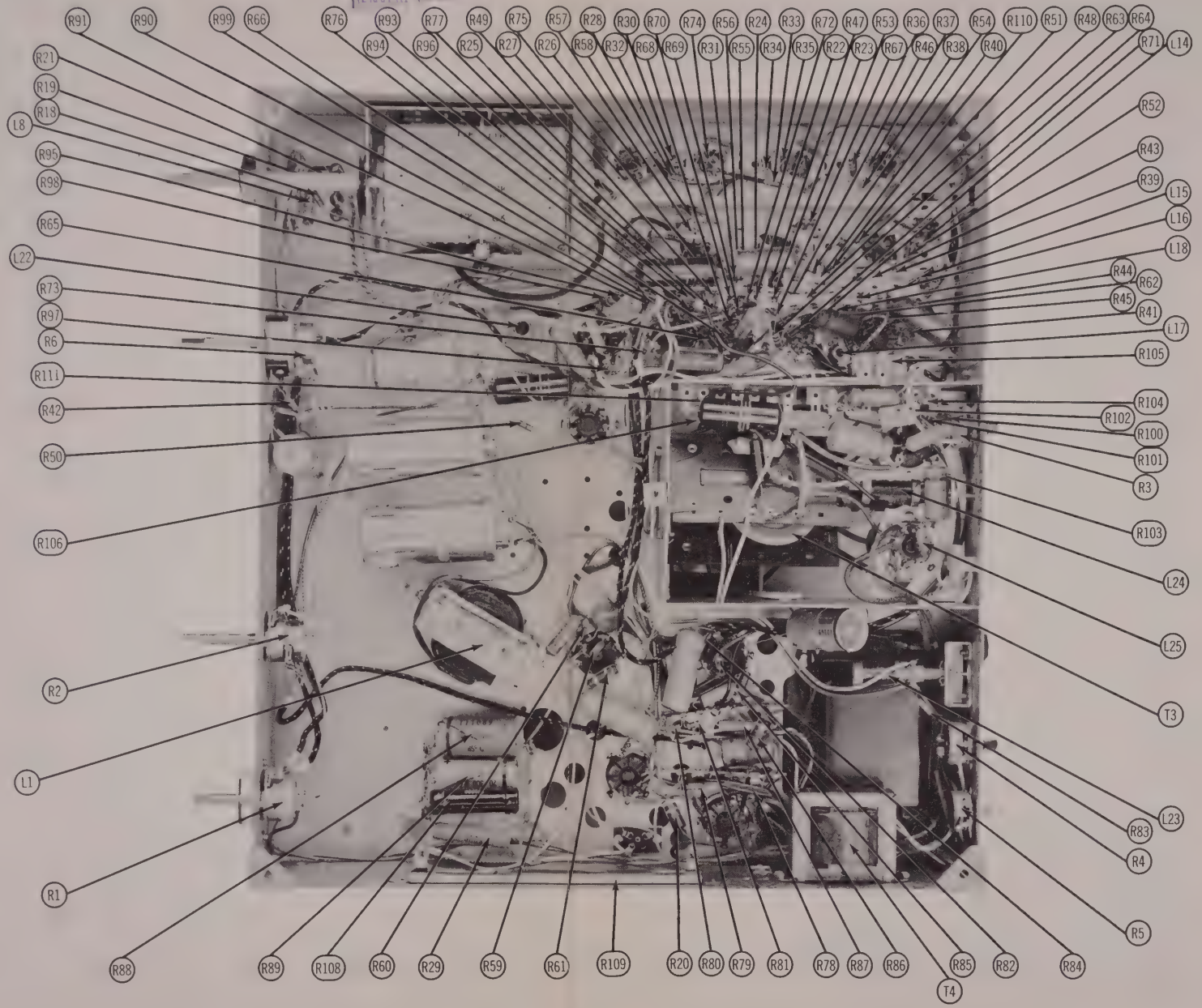
ITEM No.	USE	DC RES. PRI.	DC RES. SEC.	REPLACEMENT DATA Stromberg-Carlson PART No.	MERIT PART No.	IRC PART No.	NOTES
L2	Ant. Coils	0Ω					
L3	RF Choke	0Ω					
L4	Fil. Choke	0Ω					
L5	RF, Mixer Grid & Osc. Coils	0Ω					
L6	Fil. Choke	0Ω					
L7	Conv. Plate	.4Ω					
L8	Fil. Choke	.14Ω				CL-1	.47 Microhenries
L9	1st. Video IF	.1Ω	.4Ω	114119			
L10	2nd. Video IF	1.1Ω	1.1Ω	114391			Includes Trap
L11	3rd. Video IF	1Ω	1Ω	114397			Includes Trap
L12	4th. Video IF	.8Ω	.8Ω	114406			Includes Trap
L13	5th. Video IF	.4Ω	.4Ω	114407			
L14	Peaking Coil	4.8Ω		114637			Wound on 5.6K Resistor
L15	Peaking Coil	5.5Ω		114742			
L16	Peaking Coil	6.6Ω		114657			
L17	4.5MC Trap	1.6Ω		114383	TV-151		
L18	Peaking Coil	8.5Ω		114640	TV-184		
L19	1st. Sound IF	3Ω		114400			
L20	2nd. Sound IF	3Ω		114400			Part #114401 used in some applications
L21	Ratio Det.	5Ω	.6Ω	114375			Tap ⓐ 1Ω
L22	Horiz. Osc.	95Ω		114069	TV-163		
L23	Horiz. Size Coil	2.1Ω		114083	MWC-2		
L24	Horiz. Lin.	5.6Ω		114084			Tapⓐ 1.6Ω
L25	Anti-Ringing Coil.	1.8Ω		114693		CLA	2.2 Microhenries
L26	Fil. Choke	3Ω				CLA	3.3 Microhenries

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA Stromberg Carlson PART No. FUSE	Stromberg Carlson PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M1	MDL	5A.	128007	128008	313005 (3AG-5A.-S/B	342001	MDL5	HKP
M2	GJV Pigtail	1/4A. 250V.	128000		318.250 (3AG-P/T		GJV 1/4	

MISCELLANEOUS

ITEM No.	PART NAME	Stromberg Carlson PART No.	NOTES
M3	RF Tuner	164019	
M4	Crystal	162157	1N64
M5	Switch	158037	TV - Phono
M6	Centering Magnet	114117	
M7	Magnet	114740	Pin Cushion Correction (2 Required) Complete with support arms
M8	Ion Trap	114645	
B1	Trimmer	110043	70-470MMF (Horiz. Freq. Control)
	Knob	134183	Brown - Horiz. Hold & Contrast
	Knob	134184	Brown - Vert. Hold & Brightness
	Knob	134181	Brown - Channel Selector
	Knob	134182	Brown - Fine Tuning
	Knob	134180	Brown - Off/On Volume



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

PHOTOFACT* Folder

TRAVLER
MODELS 217-15, 217-16 (Ch. 34A2)

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3924 MEADE ST
DENVER, COLORADO

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MODEL 217-15

TRAVLER
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TRAVLER
MODELS 217-15, 217-16 (Ch. 34A2)

C. T. BLANKENSHIP
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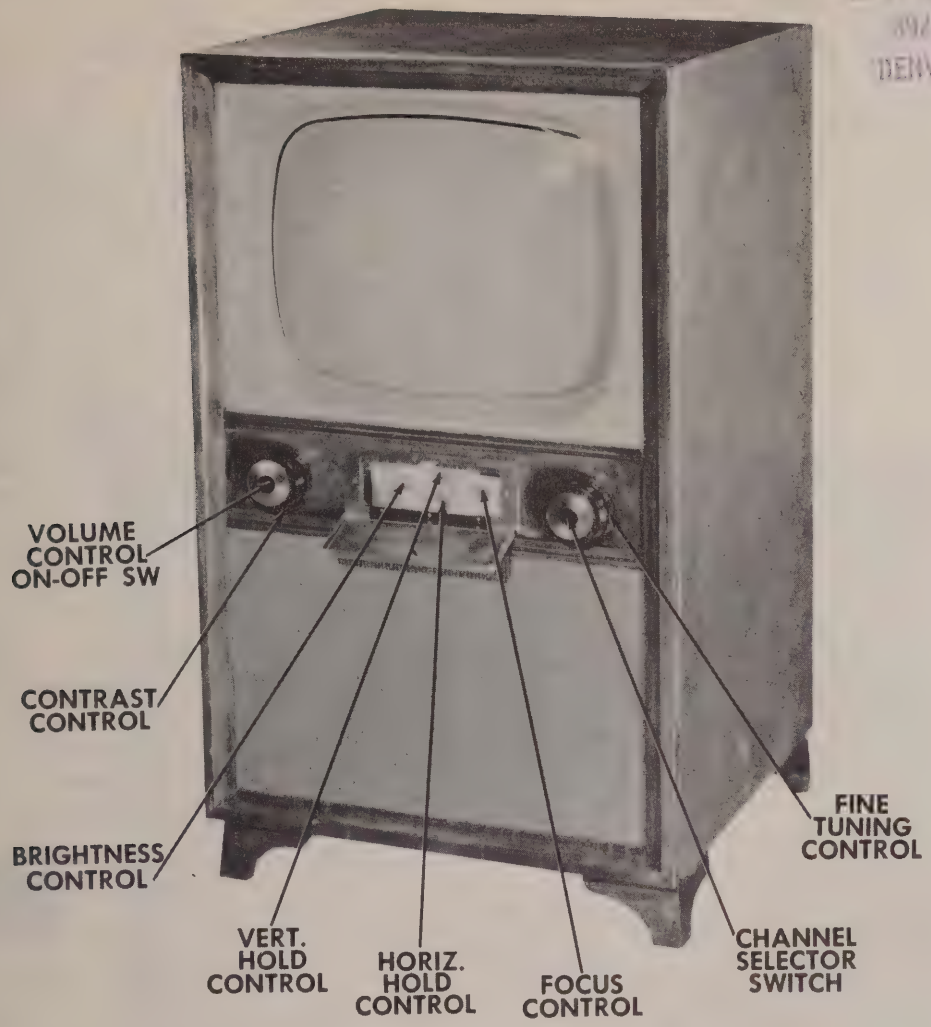

TRAVLER
MODELS 217-15, 217-16 (Ch. 34A2)

Trav-ler 217-15

TRADE NAME	Trav-ler Models 217-15, 16 (Ch.34A2)
MANUFACTURER	Trav-ler Radio & Tel. Corp., 571 W. Jackson Blvd., Chicago, Ill.
TYPE SET	Television Receiver
TUBES	Twenty One
POWER SUPPLY	110-120 Volts AC-60 Cycle — RATING 1.7 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13

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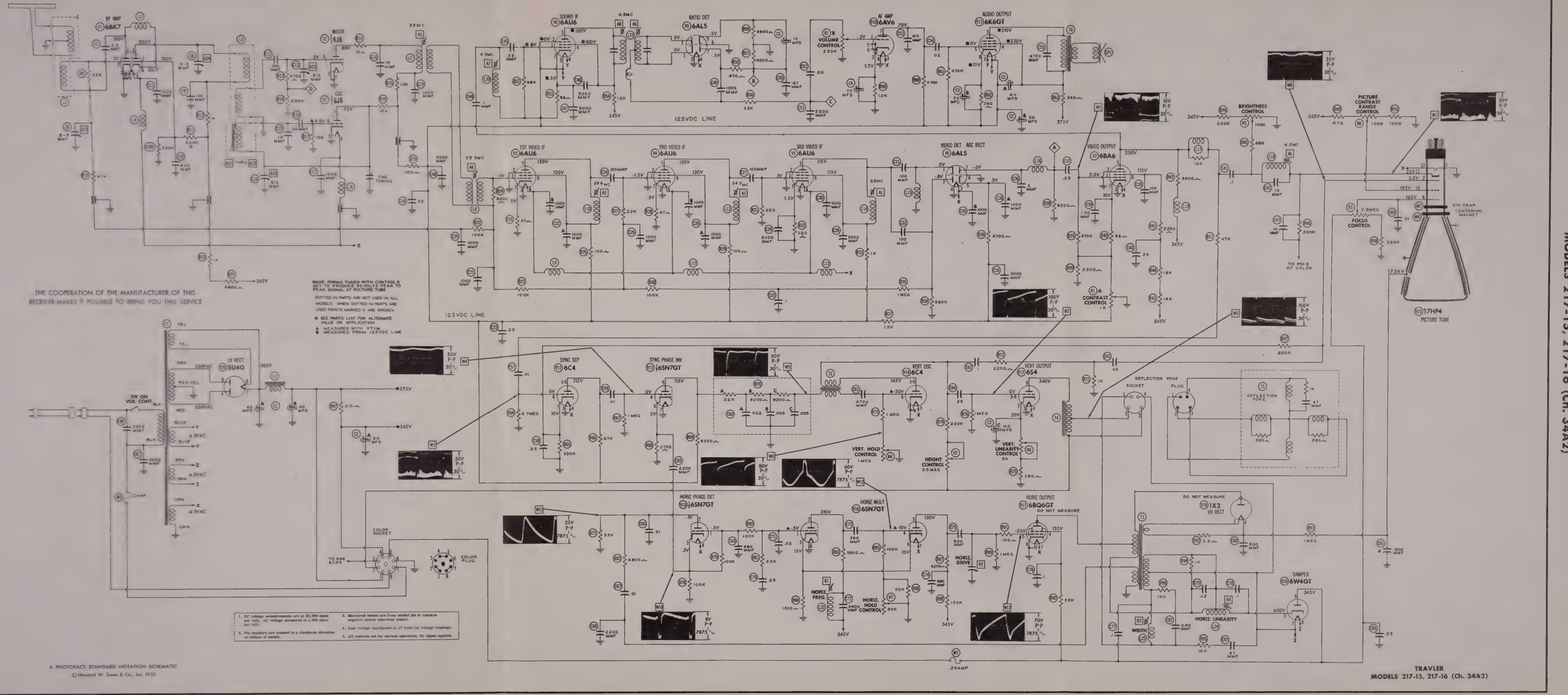
RF AMP V1 6BK7
MIXER V2 6J6
OSC V2 6J6
23 MC
SOUND IF V8 6AU6
4.5MC
RATIO DET V9 6AL5
AF AMP V10 6AV6
AUDIO OUTPUT V11 6K6GT
125VDC LINE
1ST VIDEO IF V5 6AU6
2ND VIDEO IF V4 6AU6
3RD VIDEO IF V3 6AU6
25.3MC
24.5MC
24.6MC
VIDEO DET AGC RECT V6 6AL5
VIDEO OUTPUT V7 6BA6
BRIGHTNESS CONTROL
PICTURE CONTRAST RANGE CONTROL
FOCUS CONTROL
17.2KV
V11 17HP4 PICTURE TUBE
TO PIN 3 OF COLOR
THE COOPERATION OF THE MANUFACTURER OF THIS RECEIVER MAKES IT POSSIBLE TO BRING YOU THIS SERVICE
WAVE FORMS TAKEN WITH CONTROLS SET TO PRODUCE 30 VOLTS PEAK TO PEAK SIGNAL AT PICTURE TUBE
DOTTED IN PARTS ARE NOT USED IN ALL MODELS WHEN DOTTED IN PARTS ARE USED POINTS MARKED X ARE BROKEN
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
A MEASURED WITH VTVM
B MEASURED FROM 125VDC LINE
LV RECT V20 5U4G
SW ON VOL CONT
SYNC SEP V13 6C4
SYNC PHASE INV V13 ½6SN7GT
VERT OSC V14 6C4
VERT OUTPUT V15 6S4
VERT. HOLD CONTROL 1 MEG
HEIGHT CONTROL 2.5 MEG
VERT. LINEARITY CONTROL 5K
DEFLECTION YOKE SOCKET
DEFLECTION YOKE PLUG
HORIZ PHASE DET V18 ½6SN7GT
HORIZ MULT V16 6SN7GT
HORIZ OUTPUT V17 6BQ6GT DO NOT MEASURE
HORIZ. FREQ.
HORIZ. HOLD CONTROL 50K
HORIZ. DRIVE
HV RECT V19 1X2 DO NOT MEASURE
DAMPER V18 6W4GT
HORIZ. LINEARITY
WIDTH
COLOR SOCKET
COLOR PLUG
TO R46 & C43
1. DC voltage measurements are at 20,000 ohms per volt; AC voltage measured at 1,000 ohms per volt.
2. Pin numbers are counted in a clockwise direction as bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation; No signal applied.
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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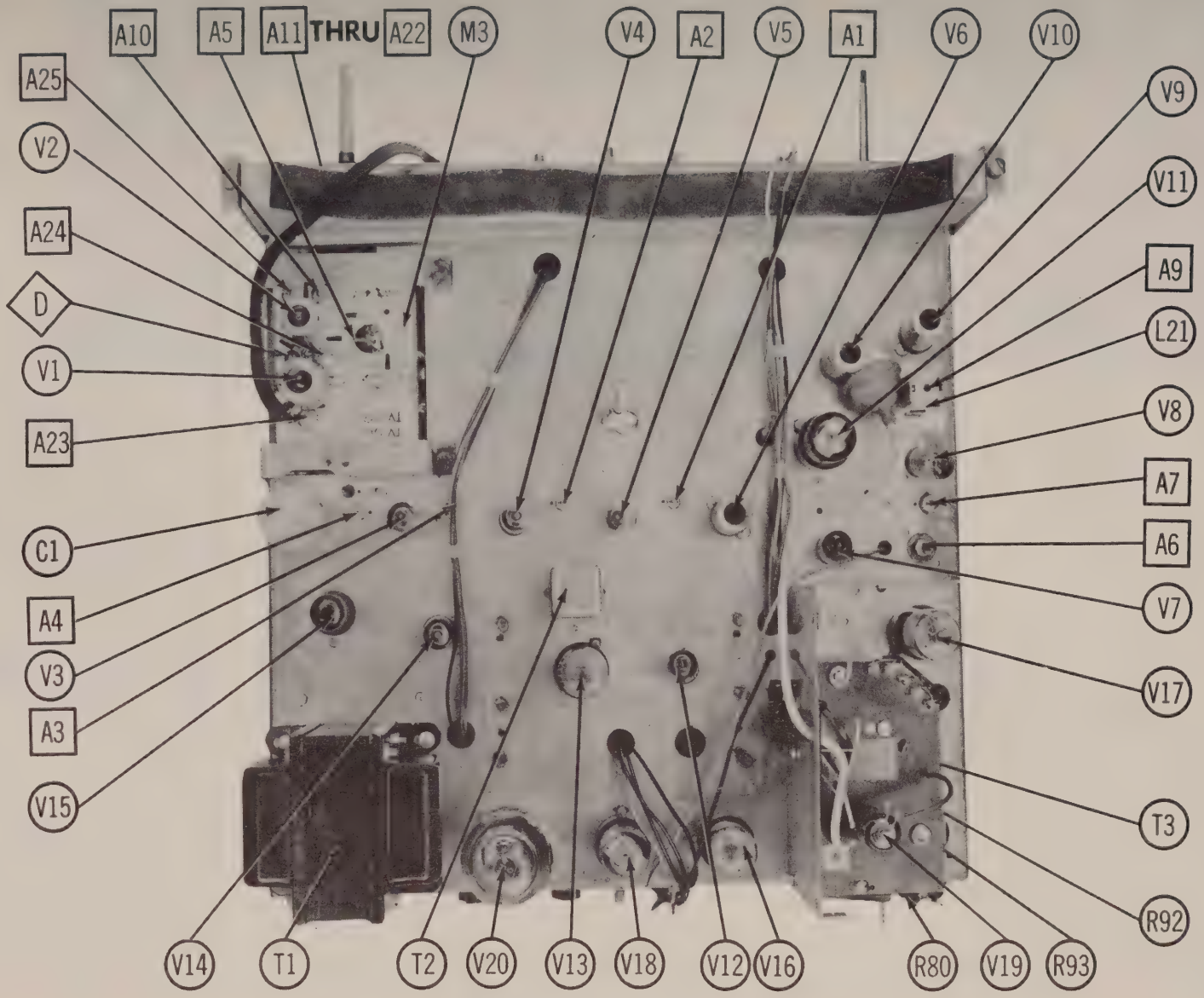
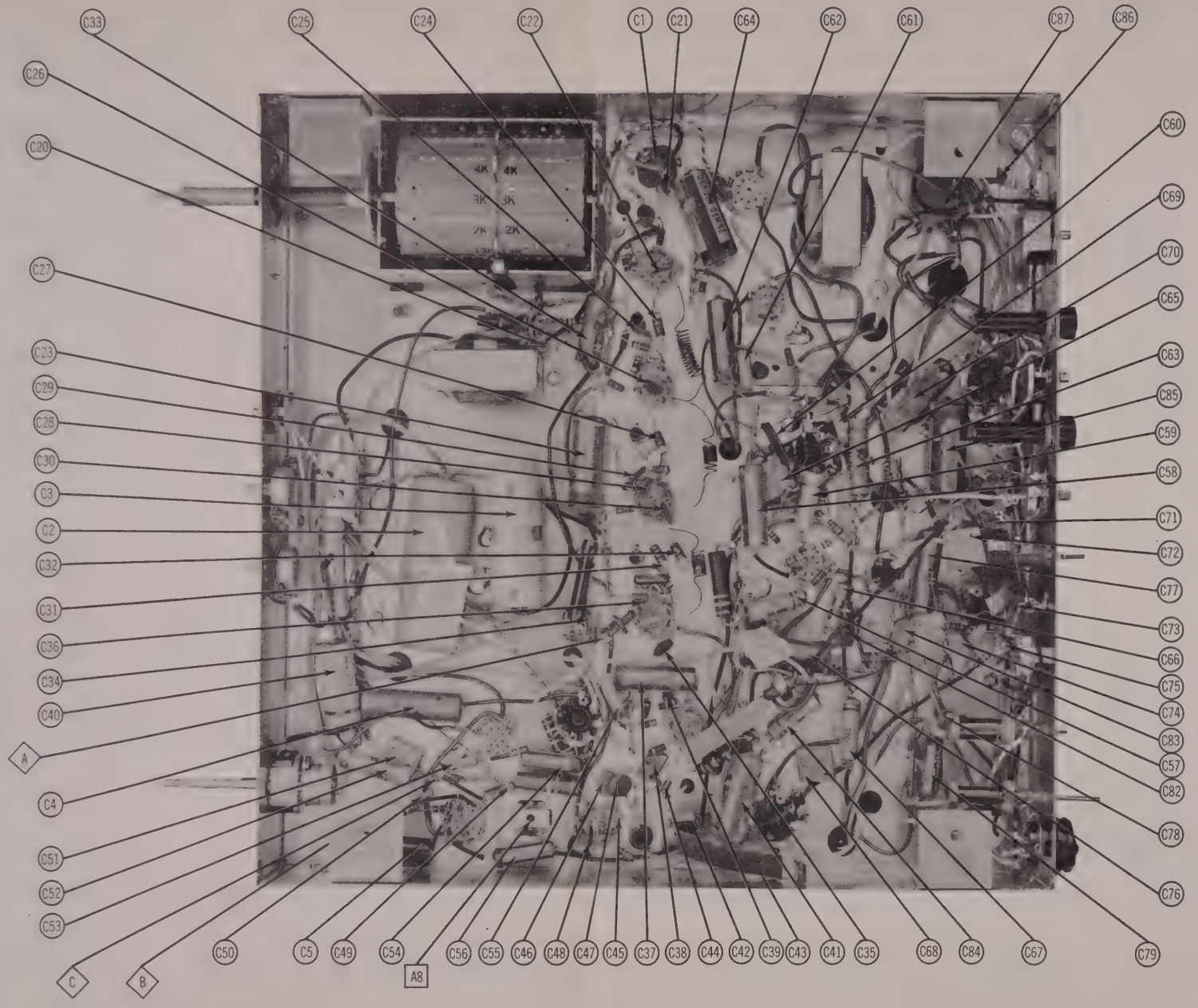
TRAVLER MODELS 217-15, 217-16 (Ch. 34A2)

TRAVLER MODELS 217-15, 217-16 (Ch. 34A2)



CHASSIS TOP VIEW

DENVER, COLORADO.



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION

PROPERTY OF
L. F. BLANKENBHI
1974 MEADE CT
DENVER

TOP VIEW

BOTTOM VIEW

TUBE PLACEMENT CHART

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

The end of the high voltage lead should be securely taped and kept away from the chassis. Do not remove the horizontal oscillator tube to disable the high voltage.

VIDEO IF ALIGNMENT

Connect the negative lead of a 3 volt battery to the ungrounded side of C33. Connect the positive lead to chassis. Remove the converter tube, V2, from its socket and replace with a dummy 6J6 from which pin 1 has been clipped. This will disable the oscillator section and reduce the possibility of erroneous indications.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	25MC (unmod.)	Any	DC probe to Point (A). Common to chassis.	A1	Adjust for maximum deflection.
2.	"	"	24.5MC	"	"	A2	"
3.	"	"	26.6MC	"	"	A3	"
4.	"	"	25.3MC	"	"	A4	"
5.	"	"	23.0MC	"	"	A5	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
6.	Direct	High side to an ungrounded tube shield floating over dummy converter tube. Low side to chassis.	24MC (10MC swp.)	21.75MC 26.25MC	Any	Vert. amp. to Point (A). Low side to chassis.		Check for response curve similar to Fig. 1 with 26.25 MC at 50% response and 21.75MC at not more than 10%. If necessary readjust A1 thru A5 for desired response.

4.5 MC TRAP ADJUSTMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
7.	.01MFD	High side to Point (A). Low side to chassis.	4.5MC (unmod.)	Any not used locally.	DC probe thru detector to pin 11 of picture tube. Common to chassis.	A6	Adjust for MINIMUM deflection.

SOUND IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
8.	.01MFD	High side to Point (A). Low side to chassis.	4.5MC (unmod.)	Any not used locally.	DC probe to Point (B). Common to chassis.	A7, A8	Adjust for maximum deflection
9.	"	"	"	"	DC probe to Point (C). Common to chassis.	A9	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60~ modulation and 450KC sweep. Use 120~ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	.01MFD	High side to Point (A). Low side to chassis.	4.5MC (450KC swp)	4.5MC	Any not used locally.	Vert. amp. to Point (B). Low side to chassis.	A7, A8	Disconnect stabilizor capacitor C5. Adjust for maximum amplitude and symmetry as per Fig. 3.
9.	"	"	"	"	"	Vert. amp. to Point (C). Low side to chassis.	A9	Reconnect capacitor C5. Adjust A9 to that 4.5MC occurs at center of crossover lines as per Fig. 4. SLIGHTLY retouch A8 for maximum amplitude and straightness of crossover lines.

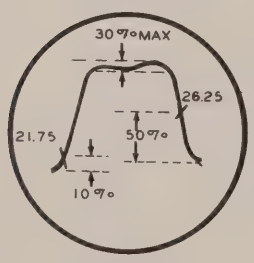


FIG.1

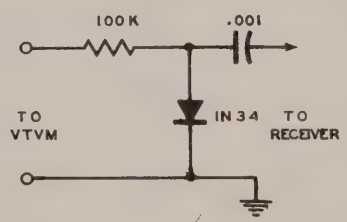


FIG.2

FIG. 3

ALIGNMENT INSTRUCTIONS (CONT.)

L. F. BLANKENSHIP
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OSCILLATOR ALIGNMENT

Remove the dummy converter tube and replace the original 6J6 in its socket.
Complete oscillator alignment may not be necessary. If the oscillator seems to be off frequency approximately the same amount for a majority of the channels, it may be possible to correct them in one step using A10. It should be noted that this is an all channel oscillator circuit adjustment and should not be used to correct for any single channel. If adjustment of A10 will not bring all channels well within the range of the fine tuning control it will be necessary to adjust the channel strip adjustment for each channel that is off frequency.
The channel strip adjustment screws are reached through a hole just to the right of the channel switch shaft. The correct adjustment screw is accessible through this hole as the channel switch is turned to each channel.
Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the fine tuning control to the mid-position of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
10	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	213MC (10MC swp.)	211.25MC 215.75MC	13	Vert. amp. to Point (A). Low side to chassis.	A11	Adjust to place video marker at 50% of response curve as per Fig. 5.
			207MC (10MC swp.)	205.25MC 209.75MC	12		A12	
			201MC (10MC swp.)	199.25MC 203.75MC	11		A13	
			195MC (10MC swp.)	193.25MC 195.75MC	10		A14	
			189MC (10MC swp.)	187.25MC 191.75MC	9		A15	
			183MC (10MC swp.)	181.25MC 185.75MC	8		A16	
			177MC (10MC swp.)	175.25MC 179.75MC	7		A17	
			85MC (10MC swp.)	83.25MC 87.75MC	6		A18	
			79MC (10MC swp.)	77.25MC 81.75MC	5		A19	
			69MC (10MC swp.)	67.25MC 71.75MC	4		A20	
			63MC (10MC swp.)	61.25MC 65.75MC	3		A21	
			57MC (10MC swp.)	55.25MC 59.75MC	2		A22	

RF AND MIXER ALIGNMENT

Connect the synchronized sweep voltage from the signal generator to the horizontal input of the oscilloscope for horizontal deflection.
The sweep generator output lead should be terminated with its characteristic impedance, usually 50 ohms.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	SWEEP GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
11.	Two 120Ω carbon resistors	Across antenna terminals with 120Ω in each lead.	207MC (10MC swp.)	205.25MC 209.75MC	12	Vert. amp. thru 10KΩ to Point (D). Low side to Chassis.	A23, A24 A25	Adjust for response curve similar to Fig. 6 with markers above 90%.
12.	"	"	213MC (10MC swp.)	211.25MC 215.75MC	13	"		Check all channels for response similar to Fig. 6. If markers fall below 70% on any channel make slight compromise adjustment of A23, A24 & A25 with channel selector set for that channel. Recheck all channels to see that they have not been seriously affected.
			201MC (10MC swp.)	199.25MC 203.75MC	11			
			195MC (10MC swp.)	193.25MC 197.75MC	10			
			189MC (10MC swp.)	187.25MC 191.75MC	9			
			183MC (10MC swp.)	181.25MC 185.75MC	8			
			177MC (10MC swp.)	175.25MC 179.75MC	7			
			85MC (10MC swp.)	83.25MC 87.75MC	6			
			79MC (10MC swp.)	77.25MC 81.75MC	5			
			69MC (10MC swp.)	67.25MC 71.75MC	4			
			63MC (10MC swp.)	61.25MC 65.75MC	3			
			57MC (10MC swp.)	55.25MC 59.75MC	2			

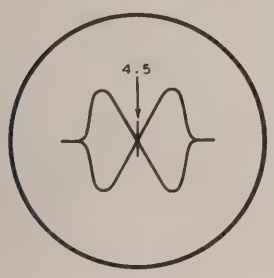


FIG. 4

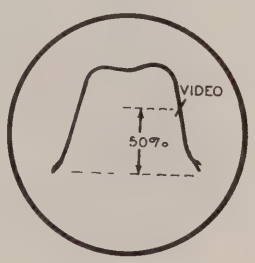


FIG. 5

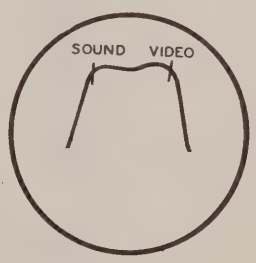
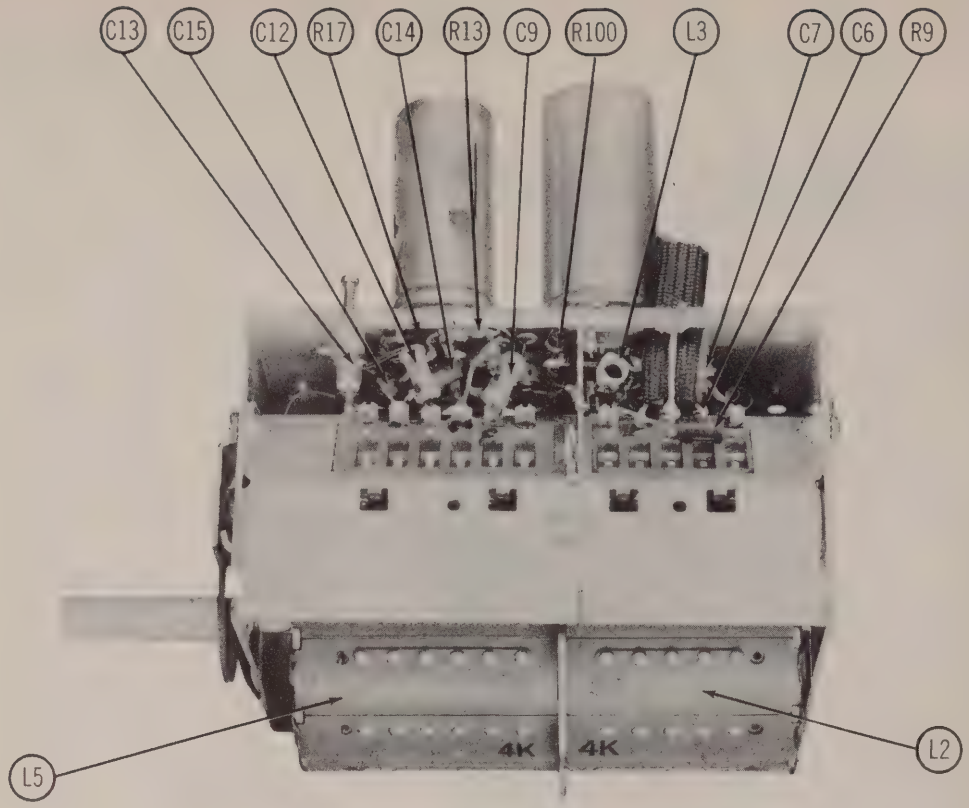


FIG. 6

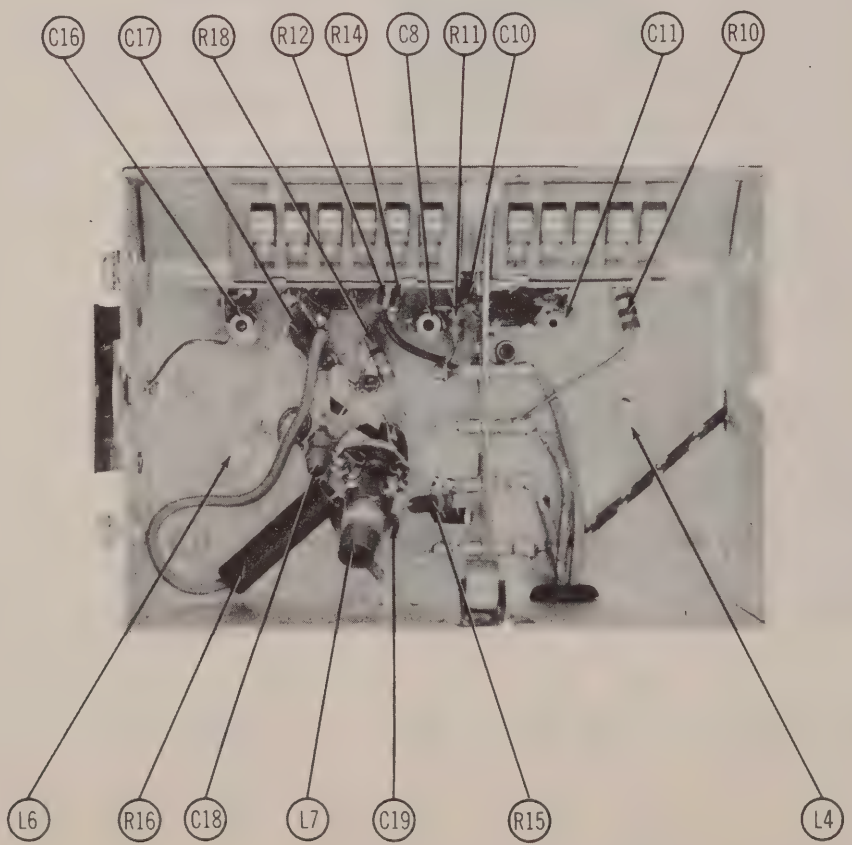
RESISTANCE MEASUREMENTS

Item	Tube	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V 1	6BK7	INF	2Meg	0Ω	.1Ω	0Ω	†9.1KΩ	110KΩ	INF	0Ω
V 2	6J6	■10KΩ	■10KΩ	.1Ω	0Ω	220KΩ	10KΩ	0Ω		
V 3	6AU6	1.9Meg	0Ω	0Ω	.1Ω	■100Ω	■100Ω	47Ω		
V 4	6AU6	1.8Meg	0Ω	0Ω	.1Ω	■100Ω	■100Ω	47Ω		
V 5	6AU6	22KΩ	0Ω	0Ω	.1Ω	■1KΩ	■1KΩ	220Ω		
V 6	6AL5	3Ω	680KΩ	.1Ω	0Ω	5.4KΩ	0Ω	8.2KΩ		
V 7	6BA6	470KΩ	0Ω	0Ω	.1Ω	†7.1KΩ	†38KΩ	400Ω		
V 8	6AU6	■68KΩ	■0Ω	■0Ω	■.4Ω	†12KΩ	†12KΩ	■68Ω		
V 9	6AL5	INF	INF	0Ω	.1Ω	6.8KΩ	0Ω	7.3KΩ		
V 10	6AV6	40KΩ	12KΩ	.1Ω	0Ω	INF	INF	■470KΩ		
V 11	6K6GT	INF	■.4Ω	†900Ω	†450Ω	■470KΩ	■0Ω	■0Ω	■390Ω	
V 12	6C4	■47KΩ	INF	0Ω	.1Ω	■47KΩ	4.7Meg	330KΩ		
V 13	6SN7GT	200KΩ	33KΩ	100KΩ	1Meg	■8.2KΩ	2.7KΩ	0Ω	.1Ω	
V 14	6C4	†1.1Meg	INF	.1Ω	0Ω	†1.1Meg	1.5Meg	0Ω		
V 15	6S4	INF	1.1KΩ	1Meg	.1Ω	0Ω	1Meg	INF	INF	†1.4KΩ
V 16	6SN7GT	300KΩ	†5.9KΩ	1.5KΩ	120KΩ	†160KΩ	1.5KΩ	.1Ω	0Ω	
V 17	6BQ6GT	1Meg	0Ω	INF	†33KΩ	1Meg	INF	.1Ω	0Ω	TOP CAP #14Ω
V 18	6W4GT	INF	INF	INF	INF	†270Ω	INF	8.5Ω	8.5KΩ	
V 19	1 X 2	PINS 1 THRU 9 HAVE INF RESISTANCE								TOP CAP #265Ω
V 20	5U4G	INF	40KΩ	INF	58Ω	INF	55Ω	INF	40KΩ	
V 21	17HP4	0Ω	660KΩ	PIN 6 †670KΩ	PIN 10 †50KΩ	PIN 11 110KΩ	PIN 12 .1Ω			

ALL CONTROLS SET FOR NORMAL OPERATION, NO SIGNAL APPLIED
† MEASURED FROM PIN 2 OF V20
■ MEASURED FROM 125VDC LINE
MEASURED FROM PIN 3 OF V18

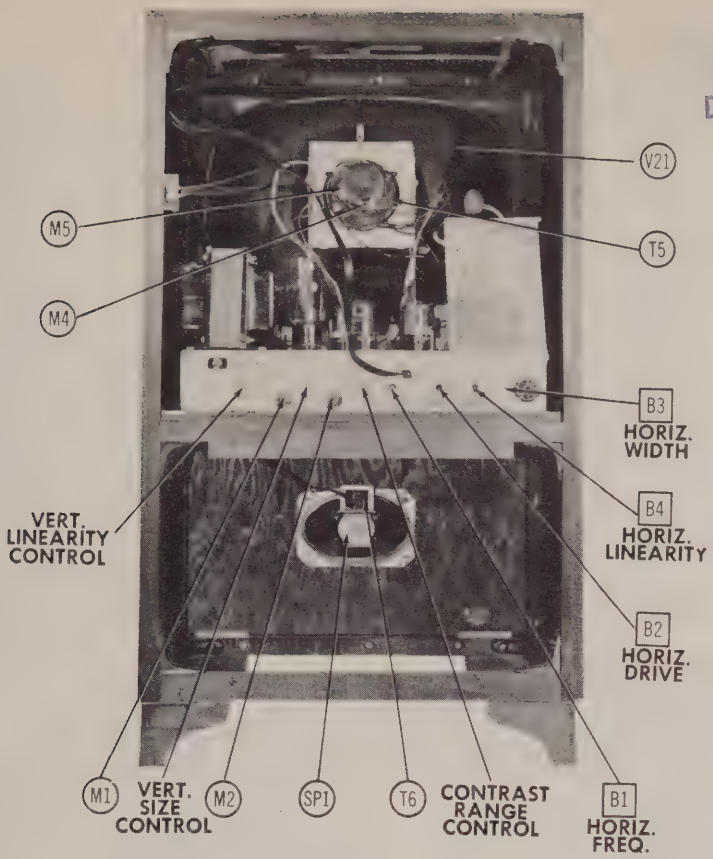


RF TUNER-RIGHT SIDE



RF TUNER-BOTTOM VIEW

3524 MEADE ST.
DENVER, COLORADO



CABINET-REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably a test pattern. Set the horizontal hold control at the center of its range. If picture does not synchronize adjust the horizontal frequency slug, B1, until the picture synchronizes horizontally.

Adjust the horizontal drive trimmer, B2, counter clockwise until picture starts to compress in center, then clockwise until compression just disappears.

Adjust the width slug, B3, until the picture is just a little wider than enough to fill the mask.

Adjust the horizontal linearity slug, B4, until the picture is symmetrical from left to right.

DISASSEMBLY INSTRUCTIONS

1. Remove 4 Push On Type Control Knobs.
2. Remove 3 wood screws. Remove 3 Clamps from Back Cover.
3. Remove 3 wood screws a 2 metal screws. Remove Back Cover.
4. Disconnect Built in Antenna and Speaker
5. Remove 2 wood screws. Remove Antenna Bracket.
6. Remove 4 metal screws holding Speaker. Remove Speaker.
7. Remove 4 Chassis Bolts. Remove Chassis.

NOTE. FOR PICTURE TUBE REMOVAL IT IS NECESSARY TO REMOVE CHASSIS AS OUTLINED ABOVE.

PARTS LIST AND DESCRIPTIONS

TUBES (SYLVANIA or Equivalent)

ITEM No	USE	REPLACEMENT DATA: TRAV-LER PART No.	REPLACEMENT DATA: STANDARD REPLACEMENT	RMA BASE TYPE	NOTES
V1	RF Amplifier	6BK7	6BK7	9AJ	
V2	Converter	636	636	7BF	
V3	1st. Video IF Amp.	6AU6	6AU6	7BK	
V4	2nd. Video IF Amp.	6AU6	6AU6	7BK	
V5	3rd. Video IF Amp.	6AU6	6AU6	7BK	
V6	Video Detector - AGC Rectifier	6AL5	6AL5	6BT	
V7	Video Output	6BA6	6BA6	7BK	
V8	Sound IF Amp.	6AU6	6AU6	7BK	
V9	Ratio Detector	6AL5	6AL5	6BT	
V10	AF Amplifier	6AV6	6AV6	7BT	
V11	Audio Output	6K6GT	6K6GT	7S	
V12	Sync. Seperator	6C4	6C4	6BG	
V13	Sync. Phase Inv. - Horiz. Phase Det.	6SN7GT	6SN7GT	8BD	
V14	Vert. Oscillator	6C4	6C4	6BG	
V15	Vert. Output	6B4	6B4	9AC	
V16	Horiz. Mult.	6SN7GT	6SN7GT	8BD	
V17	Horiz. Output	6BQ6GT	6BQ6GT	6AM	
V18	Damper	6W4GT	6W4GT	4CG	
V19	HV Rectifier	1 X2	1X2	9Y	
V20	LV Rectifier	5U4G	5U4G	5T	

CATHODE-RAY TUBE

ITEM No	REPLACEMENT DATA: TRAV-LER PART No.	REPLACEMENT DATA: SYLVANIA PART No.	RTMA BASE TYPE	NOTES
V21	17HP4	17HP4	12C	

CAPACITORS

Capacity values given in the rating column are in mfd. for Electrolytic and Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: TRAV-LER PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C1A	40	450	EC-16	AFH2-57		UPT4445		TVL-2764	▲ Filter
B	40	450							▬ Filter
C2A	30	450	EC-33	PRS450/40-40		UPT300		TVL-3708	Decoupling (Red)
B	80	150		PRS25/100					Decoupling (Green)
C	100	25							Vert. Output Cathode (Blue)
C3A	40	450	EC-17	PRS450/40		UPT2145V5		TVA-1712	Audio Output Dec. (Red)
B	50	50		PRS50/50				TVA-1308	Audio Output Cathode (Green)
C4	70	10	EC-8	PRS25/100		BRH121		TVA-1130	AF Amp. Cathode
C5	10	50	EC-30	PRS50/10		BR105		TVA-1304	Stabilizing Cap.
C6	3-9				829-10				Variable Trimmer
C7	2.2				TCZ-2.2		NP0K-2R2		Neutralizing Cap.
C8	.5-3				829-3				Variable Trimmer
C9	150			5150	D6-151	TM5T15	GP2K-151	5GA-T15	RF Amp. Plate Dec.
C10	800			BPD-0008	DD-801	TM5T8	801-001	5HK-D1	RF Amp. Grid Bypass
C11	1000			51000	D6-102	TM5D1	GP2L-102	5HK-D1	RF Amp. Fil. Bypass
C12	100			5100	D6-101	TM5T1	GP1K-101	5GA-T1	RF Coupling
C13	.5-3				829-3				Variable Trimmer
C14	30			5120NP0	TCZ-20		NP0K-200		Osc. Grid Cap.
C15	10			5110N750	TCN-10		N750K-100	5TCU-Q1	Fixed Trimmer
C16	.5-3				829-3				Variable Trimmer
C17	1000			51000	D6-102	TM5D1	GP2L-102	5HK-D1	Conv. Fil. Bypass
C18	10			5110NP0	TCZ-10		NP0K-100	5TCC-Q1	Fixed Trimmer
C19	1000			BPD-001	DD-102	TM5D1	801-001	5HK-D1	Conv. Plate Dec.
C20	1000			BPD-001	DD-102	TM5D1	801-001	5HK-D1	AGC Filter
C21	1000			BPD-001	DD-102	TM5D1	801-001	5HK-D1	AGC Filter
C22A	1000			BPD-2X001	DD-2-102	TM5DD1	812-001	5HK-2D1	1st. Video IF Dec.
B	1000								1st. Video IF Fil.
C23	1.25	600		684-25		PTE6P25		6TM-P25	RF Bypass
C24	100			5100	D6-101	TM5T1	GP1K-101	5GA-T1	IF Coupling
C25	1000			BPD-001	DD-102	TM5D1	801-001	5HK-D1	AGC Filter
C26A	1000			BPD-2X001	DD-2-102	TM5DD1	812-001	5HK-2D1	2nd. Video IF Dec.
B	1000								2nd. Video IF Fil.
C27	100			5100	D6-101	TM5T1	GP1K-101	5GA-T1	IF Coupling
C28	5000			BPD-005	DD-502	TM5D5	811-005	5HK-D5	3rd. Video IF Dec.
C29	5000			BPD-005	DD-502	TM5D5	811-005	5HK-D5	3rd. Video IF Cathode
C30	1000			BPD-001	DD-102	TM5D1	801-001	5HK-D1	3rd. Video IF Fil.
C31	100			5100	D6-101	TM5T1	GP1K-101	5GA-T1	IF Coupling
C32	100			5100	D6-101	TM5T1	GP1K-101	5GA-T1	IF Coupling
C33	.1	400		P488-1	DF-104	PTE4P1		4TM-P1	AGC Filter
C34	5000			BPD-005	DD-502	TM5D5	811-005	5HK-D5	RF Bypass
C35A	1000			BPD-2X001	DD-2-102	TM5DD1	812-001	5HK-2D1	AGC Rect. Cathode
B	1000								Video Det. Fil. Bypass
C36	5			5I5NP0	TCZ-4.7		NP0K-050		Video Det. Filter
C37	1.25	200		P488-25		PJ2P25		2TM-P25	Video Coupling
C38	100	500		1468-0001	D6-101	5W5T1	GP1K-101	1FM-31	Video Output Screen
C39	150			5150	D6-151	TM5T15	GP2K-151	5GA-T15	Video Output Cathode
C40	1.25	600		684-25		PTE6P25		6TM-P25	RF Bypass
C41	.1	600		P688-1	DF-104	PTE6P1		6TM-P1	Video Coupling
C43	10	500		1469-00001		5R5Q1		MS-41	Fixed Trimmer
C43	10	500		1469-00001		5R5Q1		MS-41	Picture Tube Cathode
C44	1				TCZ-1		NP0K-010		Sound IF Coupling
C45	33			5I33	D6-331		GP1K-330	5GA-Q33	Sound IF Coupling
C46	5000			BPD-005	DD-502	TM5D5	811-005	5HK-D5	Sound IF Decoupling
C47	5000			BPD-005	DD-502	TM5D5	811-005	5HK-D5	Sound IF Cathode
C48	5000			BPD-005	DD-502	TM5D5	811-005	5HK-D5	RF Bypass
C49	1000			51000	D6-102	TM5D1	GP2L-102	5HK-D1	Diode Load Cap.
C50	47			5I47	D6-470	5W5Q5	GP1K-470	5GA-Q47	RF Bypass
C51	2200	500		5I2200	D6-222	1R5D25	GP2-333-222	5HK-D22	De-Emphasis
C52	.05	400		P488-05	DF-503	PTE4S5		4TM-S5	Audio Coupling
C53	100	500		1468-0001	D6-101	5W5T1	GP1K-101	1FM-31	AF Amp. Plate Bypass
C54	.02	600		P688-02	DF-203	PTE6S2		6TM-S2	Audio Coupling

CAPACITORS (CONT.)

ITEM No.	RATING: CAP.	RATING: VOLT	REPLACEMENT DATA: TRAV-LER PART No.	REPLACEMENT DATA: AEROVOX PART No.	REPLACEMENT DATA: CENTRALAB PART No.	REPLACEMENT DATA: CORNELL-DUBILIER PART No.	REPLACEMENT DATA: ERIE PART No.	REPLACEMENT DATA: SPRAGUE PART No.	IDENTIFICATION CODES AND INSTALLATION NOTES
C55	4700	500		1467-005	D6-472	1D5D6	GP2-333-472	1FM-25	Audio Output Plate
C56	.02	600		P688-02	DF-203	PTE6S2		6TM-S2	RF Bypass
C57	.01	600		P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Sync. Coupling
C58	.25	200		P488-25		PJ2P25		2TM-P25	Sync. Sep. Cathode
C59	.01	600		P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Sync. Coupling
C60A	.002			P688-002		PTE6D2	GP2-333-203		Vert. Integrator Net.
B	.005		*CC-26	P688-005	*PC-100	PTE6D5	GP2-333-502	♦101C1	Vert. Integrator Net.
C	.005			P688-005		PTE6D5	GP2-333-502		Vert. Integrator Net.
C61	4700	500		1464-005		1DR5D5		MS-25	Vert. Osc. Grid Cap.
C62	.1	600		P688-1		PTE6P1		6TM-P1	Vert. Discharge
C63	.05	400		P488-05	DF-503	PTE4S5		4TM-S5	Vert. Sweep Coupling
C64	.35	600		684-25		PTE6P25		6TM-P25	Vert. Sweep Coupling
C65	2200	500		1464-0025	D6-222	1R5D25	GP2-333-222		Horiz. Sync. Coupling
C66	.01	600		P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Voltage Divider
C67	.01	600		P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	Horiz. Feedback
C68	2200	500		1464-0025		1R5D25			Voltage Divider
C69	680	500		1479-0007	D6-681	2R5T7	GP2K-681	MS-37	Horiz. AFC Filter
C70	.25	200		P488-25		PJ2P25		2TM-P25	Horiz. AFC Filter
C71	.02	600		P688-02	DF-203	PTE6S2		6TM-S2	Horiz. AFC Filter
C72	3900	500		1464-004		1DR5D4			Fixed Trimmer
C73	390	500		1469-0004		5R5T4		MS-34	Horiz. MV Feedback
C74	680	500		1479-0007		2R5T7		MS-37	Horiz. Discharge
C75	500	500		1468-0005	D6-501	5W5T5	GP2K-501	1FM-35	Horiz. Sweep Coupling
C76	.1	600		P688-1	DF-104	PTE6P1		6TM-P1	Horiz. Output Screen
C77	.1	600		P688-1	DF-104	PTE6P1		6TM-P1	Horiz. Sweep Coupling
C78	.1	200		P288-1		PJ2P1		2TM-P1	Damper Filter
C79	.03	400		P488-03		PTE6S3		6TM-S3	Damper Filter
C80	500	15000		HV20A	TV1-502	MM-A20TS		510C1	HV Filter
C81	500	15000		HV20A	TV1-502	MM-A20TS		510C1	HV Filter *
C82	240	500		1469-00025		5R5T25			Fixed Trimmer
C83	47	1500							Fixed Trimmer
C84	.01	600		P688-01	D6-103	PTE6S1	GP2-333-103	6TM-S1	RF Bypass
C85	.25	600		684-25		PTE6P25		6TM-P25	RF Bypass
C86	5000			BPD-005	DD-502	TM5D5	811-005	5HK-D5	Line Filter
C87	5000			BPD-005	DD-502	TM5D5	811-005	5HK-D5	Line Filter

* Not used in all models

♦ Items C60A, C60B, C60C, R70A, R70B, R70C are combined in one unit.

CONTROLS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TRAV-LER PART No.	REPLACEMENT DATA: IRC PART No.	REPLACEMENT DATA: CLAROSTAT PART No.	REPLACEMENT DATA: CENTRALAB PART No.	INSTALLATION NOTES
R1A	1000Ω	2	TV-VC-36	QJ-291 *	RTV-292		Contrast Control - Wire Wound - Panel
B	250KΩ	½					Volume Control & SW - Rear
R2A	2.5Meg	½	TV-VC-28	Q11-239	AG-84-S	AN-83	Height Control
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Attach to R2A per instructions
R3A	2.5Meg	½	TV-VC-28	Q11-239	AG-84-S	AN-83	Focus Control
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Attach to R3A per instructions
R4A	1Meg	½	TV-VC-30	Q11-157	AM-61-S	AN-69	Vert. Hold Control
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Attach to R4A per instructions
R5A	100KΩ	½	TV-VC-32	Q11-128	AG-49-S	AN-40	Brightness Control
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Attach to R5A per instructions
R6A	100KΩ	½	RV-VC-32	Q11-128	AG-49-S	AN-40	Picture Contrast Range Control
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Attach to R6A per instructions
R7A	50KΩ	½	TV-VC-31	Q11-123	AG-44-S	AN-31	Horiz. Hold Control
B	Shaft		Not Req.	Not Req.	FKS-1/4	AK-1	Attach to R7A per instructions
R8	5000Ω	2	TV-VC-29	W-5000	43-5000	VK-135	Vert. Linearity Control - Wire Wound

CONCENTRIKIT EQUIVALENT-KIT K-3, BASE ELEMENTS & SHAFTS W11-108 & P3-203 (Panel)
B13-130 & R1-220 (Rear) & Switch 76-1

RESISTORS

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TRAV-LER PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES ALL RESISTORS ± 10% UNLESS NOTED
R9	22KΩ 20%	½			Antenna Coil Shunt
R10	47KΩ 20%	½		BTS-47K	RF Amp. Grid
R11	220KΩ 20%	½			Voltage Divider - See Note 1
R12	1000Ω 20%	½		BTS-1000	RF Amp. Plate Decoupling
R13	4700Ω	½		BTS-4700	Mixer Grid
R14	220KΩ 20%	½			Mixer Grid
R15	10KΩ	½			Mixer Plate Decoupling
R16	10Ω	½			Parasitic Suppressor
R17	10KΩ	½			Osc. Grid
R18	10KΩ	½			Osc. Plate
R19	100Ω 20%	½		BTS-100	Decoupling
R20	1000Ω	1		BTA-1000	Decoupling
R21	6800Ω	5	TV-WR-8	1 3/4A-6800	Voltage Dropping - Wire Wound
R22	100KΩ	½		BTS-100K	AGC Network
R23	100KΩ	½		BTS-100K	AGC Network
R24	8200Ω	½			1st. Video IF Coil Shunt
R25	47Ω	½			1st. Video IF Amp. Cathode
R26	100Ω 20%	½		BTS-100	1st. Video IF Amp. Decoupling
R27	22KΩ	½			2nd. Video IF Amp. Grid
R28	47Ω	½			2nd. Video IF Amp. Cathode
R29	100Ω 20%	½		BTS-100	2nd. Video IF Amp. Decoupling
R30	100KΩ	½		BTS-100K	AGC Network
R31	22KΩ	½			3rd. Video IF Amp. Grid
R32	220Ω	½		BTS-220	3rd. Video IF Amp. Cathode
R33	1000Ω 20%	½		BTS-1000	3rd. Video IF Amp. Decoupling
R34	680KΩ 20%	½		BTS-680K	AGC Diode Load
R35	1Meg 20%	½		BTS-1Meg	AGC Network
R36	4700Ω	½		BTS-4700	Voltage Divider
R37	15KΩ	10		1 3/4A-15K	Voltage Divider - Wire Wound
R38	8200Ω	½		BTS-8200	Video Det. Diode Load
R39	470KΩ 20%	½		BTS-470K	Video Output Grid
R40	68Ω	½			Video Output Cathode
R41	2200Ω	½		BTS-2200	Video Output Screen
R42	6800Ω	5	TV-WR-8	1 3/4A-6800	Video Output Plate - Wire Wound
R43	18KΩ	1		BTA-18K	Voltage Dropping
R44	18KΩ	1		BTA-18K	Voltage Dropping

RESISTORS (CONT.)

ITEM No.	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TRAV-LER PART No.	REPLACEMENT DATA: IRC PART No.	IDENTIFICATION CODES
R45	68KΩ	½		BTS-68K	Picture Tube Cathode
R46	330KΩ	½		BTS-330K	Picture Tube Cathode
R47	330KΩ	½		BTS-330K	Picture Tube Grid
R48	220KΩ	½		BTS-220K	Voltage Divider
R49	47KΩ 20%	½		BTS-47K	Voltage Divider
R50	100KΩ	½		BTS-100K	Voltage Divider
R51	47KΩ 20%	½		BTS-47K	Isolation
R52	68KΩ	½			Sound IF Amp. Grid
R53	68Ω	½			Sound IF Amp. Cathode
R54	22KΩ	2			Sound IF Amp. Decoupling
R55	470Ω	½		BTS-470	Balancing
R56	33KΩ	½		BTS-33K	De-emphasis
R57	6800Ω	½		BTS-6800	Ratio Det. Diode Load
R58	6800Ω	½		BTS-6800	Ratio Det. Diode Load
R59	12KΩ	½		BTS-12K	AF Amp. Cathode
R60	470KΩ 20%	½		BTS-470K	AF Amp. Plate
R61	470KΩ 20%	½		BTS-470K	Output Grid
R62	390Ω	1		BTA-390	Output Cathode
R63	390Ω	1		BTA-390	Output Decoupling
R64	6.7Meg 20%	½		BTS-6.7Meg	Sync. Seperator Grid
R65	330KΩ	½		BTS-330K	Sync. Seperator Cathode
R66	47KΩ 20%	½		BTS-47K	Sync. Seperator Plate
R67	1Meg 20%	½		BTS-1Meg	Sync. Phase Inv. Grid
R68	2700Ω	½		BTS-2700	Sync. Phase Inv. Cathode
R69	8200Ω	½		BTS-8200	Sync. Phase Inv. Plate
R70A	22KΩ	½		BTS-22K	Integrator Network
B	8200Ω	½	♦ CC-26	BTS-8200	Integrator Network
C	8200Ω	½		BTS-8200	Integrator Network
R71	2200Ω	½		BTS-2200	Vert. Peaking
R72	1000Ω 20%	½		BTS-1000	Vert. Peaking
R73	1Meg 20%	½		BTS-1Meg	Vert. Osc. Grid
R74	220KΩ	½		BTS-220K	Vert. Osc. Plate
R75	390Ω	1		BTA-390	Vert. Output Cathode
R76	1Meg	½		BTS-1Meg	Vert. Output Grid
R77	33KΩ	½		BTS-33K	Voltage Divider
R78	100KΩ	½		BTS-100K	Horiz. Phase Det. Cathode
R79	100KΩ	½		BTS-100K	Horiz. Phase Det. Grid
R80	100KΩ	½		BTS-100K	Horiz. AFC Filter
R81	33KΩ	½		BTS-33K	Horiz. AFC Filter
R82	6800Ω	1		BTA-6800	Horiz. Feedback
R83	5600Ω 5%	½		BTS-5600 5%	Horiz. MV Plate
R84	1500Ω	½		BTS-1500	Horiz. MV Cathode
R85	100KΩ	½		BTS-100K	Horiz. MV Grid
R86	22KΩ	½		BTS-22K	Horiz. MV Grid
R87	8200Ω 20%	½		BTS-8200	Horiz. MV Plate
R88	150KΩ	½		BTS-150K	Horiz. MV Plate
R89	1Meg 20%	½		BTS-1Meg	Horiz. Output Grid
R90	33KΩ 20%	2		BTB-33K	Horiz. Output Screen
R91	100Ω 20%	½			Parasitic Suppressor
R92	3.3Ω	1			HV Rectifier Filament - Wire Wound
R93	1Meg	½			HV Filter
R94	1000Ω	1		BTA-1000	Horiz. Linearity Coil Shunt
R95	10KΩ	½		BTS-10K	Damping
R96	10KΩ	1		BTA-10K	Damping
R97	210Ω	5	TV-WR-1	1 3/4A-200	Filter
R98	220KΩ	½		BTS-220K	Voltage Divider
R99	2200Ω	½		BTS-2200	Video Output Cathode
R100	220KΩ	½			RF Amp. Grid

Note 1. Some Models use a 180KΩ Resistor in this application

♦ Items R70A, R70B, R70C, C60A, C60B, C60C, are combined in one unit

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	RATING: SEC. 3	REPLACEMENT DATA: TRAV-LER PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.
T1	117VAC @ 1.7A	780VCT @ .180ADC	5VAC 3A	6.3VAC .4A	TV-TR-9	P-8170 ①	P-3174 ①	
				SEC. #4				
				6.3VAC 1.2A				
				SEC. #5				
				6.3VAC 6A				

① Drill new Mtg. Holes

TRANSFORMER (SWEEP CIRCUITS)

ITEM No.	RATING: DC RESISTANCE PRI.	RATING: DC RESISTANCE SEC.	REPLACEMENT DATA: TRAV-LER PART No.	REPLACEMENT DATA: STANCOR PART No.	REPLACEMENT DATA: MERIT PART No.	REPLACEMENT DATA: CHICAGO PART No.	NOTES
T2	180Ω	1100Ω	TV-TR-3	A-8122	A-4003	TB0-2	Vert. Osc. Trans.
T3	262Ω	13Ω Tap					Horiz. Output Trans.
	Tap @	@ 5.5Ω					
	12Ω	SEC. 2					
		1.3Ω					
		SEC. #3					
		0Ω					
T4	1.4KΩ		TV-TR-8	A-8123	A-3037	TS0-5 ②	Vert. Output Trans.
	Tap @						
	10Ω						
T5A	45Ω		TVL-40	DY-8	MDF-70		Horiz. Deflection Coil
B	13Ω						Vert. Deflection Coil

② Drill one new Mtg. Hole

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	RATING				REPLACEMENT DATA				INSTALLATION NOTES
	IMPEDANCE		DC RES.		TRAV-LER PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
	PRI.	SEC.	PRI.	SEC.					
T6	8.2KΩ	3.3Ω	450Ω	.7Ω	Part of TV-SPK-18	A-3823 ②	A-3020	RO-16 ②	

② Drill One New Mounting Hole

SPEAKER

ITEM No.	RATINGS		REPLACEMENT DATA			NOTES
	FIELD RES.	V. C. IMP.	TRAV-LER PART No.	JENSEN PART No.	QUAM PART No.	
SP1A	P.M.	3.3Ω	TV-SPK-18		46J6	
	CONE DIA.	V. C. DIA.				
SP1B	4" X 6"	9/16"				

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA				INSTALLATION NOTES
	TOTAL DIRECT CURRENT	D. C. RESISTANCE	INDUCTANCE (0 CURRENT 1000 ∿)	TRAV-LER PART No.	STANCOR PART No.	MERIT PART No.	CHICAGO PART No.	
L1	.165ADC	58Ω	2Henries	TV-FC-1	C-2325 ①	C-2974	TR-4200 ①	① Drill one new Mtg. Hole

COILS (RF-IF)

ITEM No.	USE	DC RES.		REPLACEMENT DATA		NOTES
		PRI.	SEC.	TRAV-LER PART No.	MERIT PART No.	
L2	Ant. Coils	0Ω	0Ω			
L3	RF Choke	0Ω				
L4	Fil. Choke	0Ω				
L5	RF, Mixer Grid & Osc. Coils	0Ω				
L6	Fil. Choke	0Ω				
L7	Conv. Plate	.4Ω				
L8	1st. Video IF	0Ω	.5Ω			
L9	Fil. Choke	0Ω				
L10	2nd. Video IF	.3Ω			TV-112	
L11	Fil. Choke	0Ω				
L12	3rd. Video IF	.3Ω			TV-112	
L13	Fil. Choke	0Ω				
L14	4th. Video IF	.3Ω			TV-112	
L15	RF Choke	3Ω				
L16	Peaking Coil	3.6Ω			TV-181	
L17	Peaking Coil	5.5Ω			♦TV-186	Wound on 10K Resistor
L18	4.5MC Trap	1.6Ω			TV-151	
L19	Peaking Coil	13Ω			BC-501	
L20	Sound IF	1.6Ω			TV-151	
L21	Ratio Det.	4.2Ω	2Ω		* TV-110	Tap ⓐ 1.8Ω
L22	Horiz. Osc.	80Ω			TV-163	
L23	Width Coil	5.3Ω			MWC-2	
L24	Horiz. Lin.	4Ω				Tap ⓐ 3Ω

* Drill two Mtg. Holes.
♦ Parallel with 10K Resistor

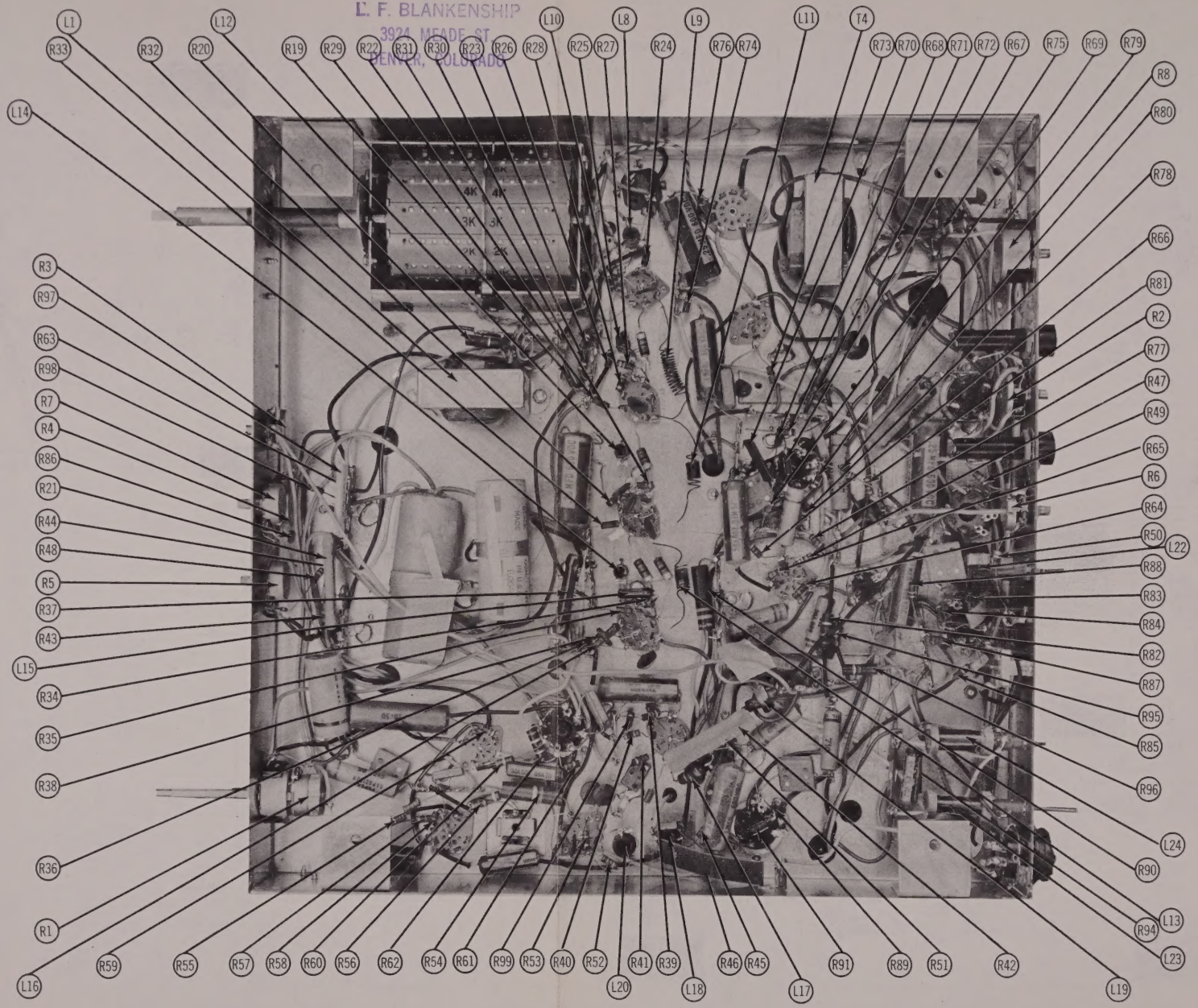
FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			TRAV-LER PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	3AG Slo-Blo	2A. 125V.			313002	341001	MDL2	HKP
M2	3AG Slo-Blo	1/4A. 125V.			313.250	341001	MDL 1/4	HKP

MISCELLANEOUS

ITEM No.	PART NAME	TRAV-LER PART No.	NOTES
M3	RF Tuner		
M4	Centering Magnet		
M5	Ion Trap		

PROPERTY OF
L. F. BLANKENSHIP
3924 MEADE ST.
DENVER, COLORADO



CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION